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December 6, 2017

Mr. Brian Conrath  
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Subject: 2010300074 - Winnebago County  
Soil Component Remedial Action Completion Report  
Source Area 4, Southeast Rockford Groundwater Contamination Superfund Site  
Rockford, Winnebago County, Illinois  
Superfund/Technical

Dear Mr. Conrath:

CDM Smith Inc. (CDM Smith) is pleased to submit two copies of the Final Soil Component Remedial Action Completion Report for Source Area 4 of the Southeast Rockford Groundwater Contamination Superfund Site, located in Rockford, Winnebago County, Illinois.

If you have any questions or comments, please contact me at (312) 780-7737.

Sincerely,

A handwritten signature in blue ink, appearing to read "John C. Grabs".

John C. Grabs, P.G.  
Senior Project Manager  
CDM Smith, Inc.

cc: Karen Kirchner, U.S. EPA (electronic only)

ILLINOIS EPA

**Soil Component Remedial Action  
Completion Report**

Source Area 4  
Southeast Rockford Groundwater  
Contamination Superfund Site

FINAL REPORT

December 2017





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## Abbreviations and Acronyms

1,1,1-TCA	1,1,1-trichloroethane
1,1,2-TCA	1,1,2-trichloroethane
1,1-DCE	1,1-dichloroethene
Area 4	Source Area 4
bgs	below ground surface
Bodine	Bodine Environmental Services, Inc.
CDM Smith	CDM Smith, Inc.
CLP	Contract Laboratory Program
cm/sec	centimeter per second
COC	contaminant of concern
CPVC	chlorinated polyvinyl chloride
Creative Crane	Creative Crane and Rigging, Inc.
ERH	electrical resistance heating
ESD	Explanation of Significant Difference
FFS	Focused Feasibility Study
ft/day	feet per day
GETS	Groundwater Extraction and Treatment System
GMZ	Groundwater Management Zone
GWP	groundwater monitoring probe
hp	horsepower
HSA	hollow-stem auger
IC	institutional control
ID	inside diameter
Illinois EPA	Illinois Environmental Protection Agency
K&S	K&S Engineers, Inc.
kW	kilowatt
kWh	kilowatt hour
LGAC	liquid-phase granular activated carbon
LNAPL	light non-aqueous phase liquid
MPE	multi-phase extraction
MS/MSD	matrix spike/matrix spike duplicate
NAPL	non-aqueous phase liquid
NPL	National Priorities List
O&F	operational and functional
O&M	Operation and Maintenance
OU	operable unit

OU1	Operable Unit 1
OU2	Operable Unit 2
OU3	Operable Unit 3
PARCCS	precision, accuracy, representativeness, comparability, completeness, and sensitivity
PCE	tetrachloroethene
PCU	Power Control Unit
PEX	cross-linked polyethylene
PID	photoionization detector
ppb	part per billion
ppm	part per million
PRP	potentially responsible party
psi	pounds per square inch
PVC	polyvinyl chloride
QA	quality assurance
QAPP	Quality Assurance Project Plan
QC	quality control
RA	Remedial Action
RAO	remedial action objective
RD	Remedial Design
RI	Remedial Investigation
RG	Remediation Goal
ROD	Record of Decision
RPD	relative percent difference
SAP	Sampling and Analysis Plan
SCOU	Source Control Operable Unit
SDG	sample delivery group
SERGC	Southeast Rockford Groundwater Contamination Superfund Site
SERT	Soil Electrical Resistance Testing
sf	square feet
SRB	sulfate-reducing bacteria
STAT	STAT Analysis Inc.
TCE	trichloroethene
Terra	Terra Probe Environmental, Inc.
TMP	temperature monitoring probe
TRS	TRS Group, Inc.
U.S. EPA	United States Environmental Protection Agency
V	volt

VGAC	vapor-phase granular activated carbon
VOC	volatile organic compound
VP	vapor piezometer
VR	vapor recovery

# Section 1

## Introduction

CDM Smith, Inc. (CDM Smith) received Work Orders 4 and 5 from the Illinois Environmental Protection Agency (Illinois EPA) under Contract HWA-16302. Under these work orders, CDM Smith was authorized to conduct remedial action (RA) oversight and document these activities in a completion report for the Source Area 4 (Area 4) soil component of the Southeast Rockford Groundwater Contamination Superfund site (SERGC) located in Rockford, Illinois. Field documentation including an executed Consent for Access to Property, logbook notes, and daily reports, generated by CDM Smith is provided in Appendix A.

The RA was conducted in accordance with the Operable Unit 3 (OU3, or Source Control Operable Unit) Record of Decision (ROD) (U.S. EPA 2002) and the Explanation of Significant Differences (ESD) signed by Illinois EPA and United State Environmental Protection Agency (U.S. EPA) in July 2012.

### 1.1 Purpose and Organization

The purpose of this RA completion report is to provide information regarding the implementation of the soil RA at Area 4. As described in the Close Out Procedures for National Priorities List (NPL) Sites guidance, an RA completion report is to be completed after the RA is complete (U.S. EPA 2011).

In general accordance with the close-out procedures guidance, this report is organized into the following sections:

**Section 1 – Introduction:** provides a Site description and Site history for Area 4.

**Section 2 – Source Area 4 Description:** provides a summary of the ROD requirements and remediation goals (RGs) and other characteristics of the soil remedial design for OU3 – Area 4.

**Section 3 – Chronology of Events:** provides a chronological summary of events that took place during the RA.

**Section 4 – Construction Activities:** provides a summary of the soil RA construction activities conducted.

**Section 5 – Operational Readiness Review and Electrical Resistance Heating System Startup Operations:** provides details pertaining to the operational readiness review as well as details about the Electrical Resistance Heating (ERH) system start up procedures.

**Section 6 – ERH System Operation and Maintenance:** provides details about ERH system operation and maintenance performed while the ERH system was running.

**Section 7 – Performance Standards and Construction Quality Control:** provides details and a discussion about confirmation soil sampling at Area 4.



**Section 8 – Final Inspections and Demobilization:** provides details about ERH equipment demobilization and the final demobilization completion meeting.

**Section 9 – Area 4 Contact Information:** provides a list of contact information for personnel involved in the construction of the ERH system, including Illinois EPA personnel, and contractor personnel.

**Section 10 – References:** provides documents referenced in report.

## 1.2 Site Name, Location and Description

The Southeast Rockford Groundwater Contamination Site is located in the southeast portion of Rockford, Illinois and covers an area approximately three miles long by two and one-half miles wide and has three operable units (OU):

- Operable Unit 1 (OU1): Drinking Water Operable Unit
- Operable Unit 2 (OU2): Groundwater Operable Unit
- Operable Unit 3 (OU3): Source Control Operable Unit

OU1 focused on providing local residents with a safe supply of drinking water, while OU2 addressed the area-wide groundwater contamination. A remedial investigation (RI) was conducted for OU2 that identified the primary source areas for groundwater contamination. These source areas include Areas 4, 7, 9/10, and 11. The contaminant plume in the groundwater with total chlorinated volatile organic compound (VOC) concentrations above 10 parts per billion (ppb) defines the boundaries of the Southeast Rockford Superfund Site, as defined by the OU2 ROD (U.S. EPA 1995). The extent of the Southeast Rockford Groundwater Contamination Site is shown in **Figure 1-1**.

OU3 began as a state-lead action in May 1996 to select remedies for each of the source areas. Additional investigations were conducted for OU3 to determine the best course of action to clean up the source areas. The ROD for OU3 (U.S. EPA 2002) contains the actions, alternatives and preferred options for remediation of the source area contamination. The remedies selected for each source were split into separate soil and “leachate” components, where leachate was defined as shallow contaminated groundwater within the source area. The RA discussed in this report was implemented to remediate the soil contamination at Area 4 in accordance with the OU3 ROD.

Area 4 is located in southeast portion of Rockford, Illinois, within a mixed industrial, commercial, and residential area. A residential trailer park is located adjacent to Area 4 to the northeast. The location of Area 4 is shown on **Figure 1-2**.

Area 4 is specifically located south of Harrison Avenue at 2360 Marshall Street. This location consists of a building and a parking lot that formerly housed the Swebco Manufacturing, Inc. machine shop and was last used as a wood pallet manufacturing and refurbishing operation. The building is currently vacant and was condemned by the City of Rockford in July 2016. Prior to and during the RA, unauthorized access to the building was noticed; however, this did not impact progress of the RA. Property taxes for the property have not been paid in a number of years and the property is in receivership.

## 1.3 Site History

In 1981, the City of Rockford discovered groundwater contamination at the property that became the Southeast Rockford Superfund Site. From 1981 to 1997, the Illinois EPA and the Illinois Department of Public Health performed investigations at the site that revealed that VOCs were present in the groundwater, soil, and soil gas. During this and subsequent investigations, numerous contaminants of concern (COC) were identified including 1,1-dichloroethene (1,1-DCE), 1,1,1-trichloroethane (1,1,1-TCA), 1,1,2-trichloroethane (1,1,2-TCA), trichloroethene (TCE), tetrachloroethene (PCE), and carbon tetrachloride.

Historical activities at the Site by Swebco Manufacturing, Inc. resulted in spills, leaks, and/or direct discharges of chemicals at the former loading dock area and other areas. Chlorinated solvents are the principal contaminants present at the Site. Soil contamination, including visible staining and free product, existed from approximately 12 to 37 feet below ground surface (bgs) under the southern portion of the building and from 25 to 37 feet bgs in the northern portion of the parking lot area, and from just below the surface to 37 feet bgs in the former loading dock area where waste was thought to have been placed on the ground. Groundwater samples collected from the aquifer in the overburden soil revealed that chlorinated solvent contamination was present in the groundwater. Depth to groundwater varies seasonally by up to several feet, but is generally encountered at approximately 30 feet bgs.

The Site was proposed for listing on the NPL in the Federal Register on June 24, 1988, and was formally added to the NPL on March 31, 1989 as a state-lead, federally-funded Superfund site. The ROD for OU3 of the Site was signed by the Illinois EPA Director on May 8, 2002 and by the U.S. EPA Superfund Division Director on June 11, 2002. The SERGC is identified by the Comprehensive Environmental Response, Compensation, and Liability Information System identification number of ILD981000417.

## 1.4 Regulatory Enforcement Activities

Since the development of the 1995 ROD, there have been several major enforcement agreements developed between the U. S. EPA, Illinois EPA and parties associated with the Southeast Rockford site. The first of these was a consent decree entered by the federal district court in Rockford in April 1998. This decree required the City of Rockford to install water mains and services within the public right-of-way, provide needed connections to homes and businesses, supplement the previously existing groundwater well-monitoring network with new wells, and commence a long-term groundwater sampling and analytical program. This work has entered the monitoring phase. Over 9,200 feet of new water mains have been installed, and an additional 262 individual water service connections have been made. A total of nine new groundwater monitoring wells were installed, with several of these located near the Rock River. The consent decree also required the payment of up to \$200,000 by the City of Rockford to the State of Illinois and federal government for future oversight costs.

Several subsequent consent decrees were entered into with various potentially responsible parties, some of which were source area specific.

## 1.5 Investigation Activities and Remedial Actions

This section presents a brief summary of previous investigation activities at Area 4, significant findings of the RI, Focused Feasibility Study (FFS) and pre-RA characterization activities, as well as previous RAs conducted.

### 1.5.1 Historical Investigations

The Phase I RI for the Southeast Rockford Groundwater Contamination Site was conducted from May to October of 1991 and consisted primarily of a site-wide soil gas survey, monitoring well installation, and groundwater sampling and analysis. Within Area 4, ten soil gas samples were collected and down gradient monitoring wells were sampled. The results from the Phase I RI sampling indicated that elevated levels of TCA, PCE and TCE were present in the subsurface soils and in groundwater. Based on these results, the Phase II RI activities focused on finding the source areas of contamination within Area 4.

The Phase II activities were conducted from January 1993 to January 1994 and included additional soil gas sampling, installation and sampling of six soil borings and collection of two surficial soil samples. The Phase II results indicated that high concentrations of VOCs, primarily TCA, were present in the subsurface at depths ranging from 8 feet bgs to approximately 30 feet bgs. The Phase II site-wide groundwater investigation conducted concurrently also indicated the same contaminant mix down gradient, confirming that the subsurface in Area 4 was impacting site-wide groundwater. In December 1993, residential air sampling was conducted in Area 4 to determine if the soil and groundwater contamination was affecting indoor air quality in homes near the source. The VOCs detected in the indoor air samples were consistent with those detected in the soil gas but were not found to be present at levels above health-based guidelines. Additional indoor air sampling was conducted in Area 4 in July 2003 and evaluated using the more recently developed soil vapor intrusion modeling guidelines. This indoor air evaluation indicated that the migration pathways are generally inadequate or incomplete and do not result in indoor air concentrations at levels that present an unacceptable health risk.

### 1.5.2 Remedial Investigation and Feasibility Study

The RI Report for the site-wide groundwater investigation and source area identification was completed by CDM Smith (CDM Smith 1995) and resulted in the signing of the OU2 ROD which required additional extension of the City of Rockford municipal water system and selected natural attenuation, long-term groundwater monitoring, and source control measures as the remedy to restore the contaminated aquifer. In 2000 the Source Control Operable Unit (SCOU) RI and FFS reports were completed.

The SCOU FFS addressed contaminated soils, non-aqueous phase liquid (NAPL), and leachate considered to be principal threat wastes and the primary causes of groundwater contamination at the four source areas. Alternatives developed in the SCOU FFS were separated into soil and leachate alternatives. In order to simplify the OU3 ROD, technologies intended to contain and/or treat contaminated shallow groundwater in the immediate vicinity of the four primary source areas were considered leachate alternatives.

### 1.5.3 Pre-Design Activities and Pilot Testing

The subsurface consists of sand to a depth of approximately 60 feet bgs. The sand is generally fine- to medium-grained down to approximately 30 feet bgs and medium- to coarse-grained below 30 feet bgs. Several feet of silty topsoil are at the surface in most areas. The depth to groundwater is approximately 30 feet bgs and groundwater flow beneath Area 4 varies toward west and northwest. Based on a pump test conducted in 2006 at Area 4, the upper portion aquifer is highly conductive with an estimated hydraulic conductivity of 150 feet per day (ft/day) or  $5.3 \times 10^{-2}$  centimeters per second (cm/sec).

Since 2004, CDM Smith has conducted several pre-design investigations that have included the collection of soil and groundwater samples. Contamination at the site consists of contaminated soil with heavy staining and a light non-aqueous phase liquid (LNAPL) layer at the top of the aquifer. Based on the horizontal and vertical profile of the contamination and site characteristics, the contamination was divided into three zones, as shown on Figure 1 in TRS Final Report:

- Zone 1 consists of soil contamination and LNAPL below a portion of the former Swebco building that is a high-bay garage. Significant contamination generally exists between 12 and 37 feet bgs, but is closer to the building foundation on the northern end of the garage. It is believed that some waste was deposited in this area prior to construction of the garage.
- Zone 2 consists of soil contamination and LNAPL in the former loading dock area. Contamination was originally encountered between 0.5 and 37 feet bgs, but the area was subsequently excavated down to 3 feet bgs. The excavated area was lined with plastic sheeting and backfilled with clean gravel. It is believed that this is the primary location where waste was deposited.
- Zone 3 consists of the area below the parking lot where significant contamination and LNAPL exists in approximately the top 10 feet of the aquifer. The transition between Zone 2 and Zone 3 is very abrupt indicating the waste deposited in Zone 2 essentially dropped straight down until it encountered the water table and then migrated into Zone 3.

### 1.5.4 Previous Remedial Actions

An interim soil removal was conducted on September 13, 2005 in the 20 feet by 50 feet area of the former loading dock. Soils were excavated to a depth of approximately 3 feet bgs and disposed off-site as non-hazardous waste. The excavation was lined and backfilled with clean fill.

The Area 4 leachate component RA began in late 2009 and was declared operational and functional (O&F) in October 2010. The Interim Leachate Component RA Completion Report is dated February 2011. The remedy selected for Area 4 leachate was hydraulic containment; a groundwater extraction system was constructed to prevent continued migration of impacted groundwater from the site. Three groundwater extraction wells (EW001, EW002, and EW003) were installed in Marshall Street downgradient of the site as shown on the figures. Each well pumps at approximately 30 gallons per minute and sends contaminated groundwater to a treatment unit located one block west of the site before being discharged to a concrete drainage

ditch. The treatment train consists of an oil/water separator, air stripper, bag filter, and granular activated carbon for both the water and vapor effluent streams.

As part of the Area 4 leachate component, a Groundwater Management Zone (GMZ) was established. Groundwater monitoring and extraction wells at the site have been sampled quarterly since the system began operation and beginning in 2012, the quarterly events changed to semiannually. Since the beginning of sampling activities at the site, contaminant concentrations have slowly decreased over time and have generally been below applicable standards since 2014.

## Section 2

### Source Area 4 Description

This section presents background information on the Site including the following:

- A summary of requirements specified in the OU3 ROD (EPA 2002) including information on cleanup goals, institutional controls (IC), monitoring requirements, operation and maintenance requirements, and other parameters applicable to the design, construction, operation, and performance of the RA.
- Additional information regarding the basis for determining cleanup goals for the Site, including planned future land use and a summary of the remedial design, including any significant regulatory or technical considerations or events occurring during the preparation of the Remedial Design.

#### 2.1 ROD Requirements and Design Criteria

This section describes RA objectives (RAOs) and soil cleanup goals, and a description of the selected remedy for Area 4 soil.

Remedy selection was based on the nature and extent of contamination, as well as consideration of the types of and uses of the properties in each area. The remedies described in the OU3 ROD were selected to accomplish the following results: (1) stop on-going contamination of the groundwater, thus protecting the water resources for future generations; (2) ensure that VOCs in soil gas do not move into the basements of nearby residences; (3) protect people from ingestion of contaminated groundwater; (4) reduce the risk of direct contact with contaminated soil or free product beneath the ground surface; and (5) assure the project is in compliance with the OU2 ROD provisions that required controlling sources of groundwater contamination.

Source Control Alternatives developed within the OU3 FFS and discussed in the ROD were separated into soil and leachate alternatives. In some cases, technologies designed to remediate soil, NAPL, and leachate contamination are either not sufficient to protect human health and the environment, or they are not practical solutions. In these cases, technologies were considered to contain rather than treat the resulting groundwater contamination. In order to simplify the ROD, technologies intended to contain shallow, contaminated groundwater in the immediate vicinity of the four primary source areas were considered leachate alternatives.

##### 2.1.1 Remedial Action Objectives

Based on RIs and a site-specific risk assessment, RAOs were developed. The following Area 4 RAOs provide a general description of what the RA is intended to accomplish:

- Prevent the public from ingestion of soil, and direct contact with soil containing contamination in excess of state or federal standards or that poses a threat to human health

- Prevent the public from inhalation of airborne contaminants in excess of State or federal standards or that pose a threat to human health
- Prevent the further migration of contamination from Area 4 that would result in degradation of site-wide groundwater or surface water to levels in excess of State or federal standards, or that pose a threat to human health or the environment

A number of potential RA alternatives for Area 4 were developed and evaluated based on RAOs, RGs and comparative evaluation criteria. The detailed comparative analysis of Area 4 remedial alternatives is discussed in detail in the OU3 ROD. Based on the comparative analysis, the remedy selected for Area 4 includes ICs, soil excavation with on-site low temperature thermal desorption for the soil component, and hydraulic containment and treatment of leachate for the leachate component.

### 2.1.2 Selected Remedy and Cleanup Goals

The OU3 ROD for SERGC identified ex situ thermal remediation through excavation and onsite low-temperature thermal desorption as the appropriate remedy for the contaminated soils impacting the groundwater at Area 4. (The hydraulic containment remedy selected for contaminated groundwater is currently operating.) As a result of pre-design work, it was established that the volume of soil to be treated was approximately double the original estimate due to significant contamination extending below the footprint of the building onsite. The excavation of the soils beneath the building and excavation to the required depth of approximately 37 feet bgs presented significant construction challenges and increased costs. In addition, the space required to stockpile uncontaminated, contaminated, and treated soil at the same time in a relatively small area presented significant challenges for implementation of an excavation remedy and increased the time required to conduct the remedy due to staging requirements.

Therefore, the Illinois EPA and the U.S. EPA determined that employing Electrical Resistance Heating (ERH), an in situ thermal remedy for the soils, would eliminate these challenges and decrease the cleanup costs. ERH is capable of achieving the same or better results with significantly fewer health and safety hazards to construction workers and the public during implementation at a lower cost than the remedy as outlined in the ROD. The ESD that altered the remedy was submitted and signed by the Illinois EPA and the U.S. EPA on July 27, 2012.

The specific performance standards required for the implementation of the RA include achieving the following RGs established in the ROD and subsequent documentation for Area 4 as shown in the table below.

Contaminant	Soil RG	Ground-water RG	Liquid Effluent Discharge
Carbon tetrachloride*	70	5	280
1,1-Dichloroethene	60	7	1
1,1,1-Trichloroethane	9,118	200	390
1,1,2-Trichloroethane*	20	5	12
Trichloroethene	60	5	25
Tetrachloroethene*	60	5	3

Note: All units in parts per billion (ppb)

\*Subsequently established RG (Illinois EPA 2004)



Institutional controls identified in the OU1, OU2, and OU3 RODs were not changed by the ESD. These ICs included access agreements to monitoring wells located on private property, land and water use restrictions, and informational/notification programs.

## 2.2 Remedial Design Summary

The selected remedy for Area 4 is summarized in this section. The area containing the subsurface appurtenances associated with the ERH RA is divided into three remediation zones. Zone 1 is 1,350 square feet (sf) in area and is located below the building onsite. Zone 2 is 1,300 sf in area and is located adjacent to the building west of Zone 1 below a former loading dock area. Zone 3 is 6,100 sf in area, is located west of Zone 2, and extends to the west side of Marshall Street. A work plan was submitted by TRS Group, Inc., (TRS), the ERH vendor, and approved in June 2016.

### 2.2.1 Pre-Design Field Study

On January 12, 2016, TRS was on site to collect continuous soil samples to 36 feet bgs in the center of Zone 2. This is the location of the site where the highest concentrations of TCA have been historically observed and also where LNAPL has been previously observed. The soil sample was collected using a direct push rig (Geoprobe 6620) with a dual-tube 21 sampler system. A water sample was collected from the boring location by pushing a 1-inch temporary polyvinyl chloride (PVC) well with 5 feet of 10-slot screen interval. A peristaltic pump was then used to briefly purge and collect a sample from the well. Several attempts were made but no NAPL was observed.

The two soil samples with the strongest odor (from 12 to 16 feet bgs and 28 to 32 feet bgs) were selected for individual testing of percent moisture, wet and dry density, calculated porosity, sieve analysis, and gas chromatograph fingerprinting. Refer to **Appendix B** for testing results.

Soil Electrical Resistance Testing (SERT) was completed by TRS once during the pre-design study and once after electrode installation was complete to obtain the specific electrical resistance of the native soil as measured in ohms. The soil samples collected during the pre-design study ranged between approximately 23 and 47 ohm-meters which was consistent with the 34 ohm-meter value that TRS used in the preliminary design for the ERH system. Refer to Appendix B for a summary of the resistivity data. TRS also completed SERT testing at the site in September 2016 by applying low voltages to the soil volume to determine the resistance of the soil and subsequently confirm the ERH design. Although the resulting SERT data was not provided under a claim of intellectual property, no modifications to the ERH system were made and it is assumed that the results provided sufficient evidence that the system would achieve the RGs as configured.

### 2.2.2 Electrical Resistance Heating Process

ERH is a process whereby soils and groundwater are heated by creating a voltage gradient to induce current flow through the subsurface volume to be remediated. Electrical energy is introduced to the subsurface at electrodes, and it is the resistance of the soil matrix to the flow of electricity between electrodes that heats the subsurface and eventually boils a portion of the soil moisture into steam. This in situ steam generation occurs in all soil types, regardless of permeability. The heat generated by resistance to the induced electrical current also volatilizes



the target contaminants. The in situ steam generated by ERH acts as a carrier gas to carry VOCs to negative pressure vapor recovery (VR) wells.

From the VR wells, steam and soil vapors are transported via chlorinated polyvinyl chloride (CPVC) plastic piping headers to the ERH condenser where the recovered mixture is passed through a vapor/liquid separator and heat exchanger. The condensate generated following the heat exchange is captured and conveyed for subsequent treatment and the extracted air is treated using vapor-phase granular activated carbon (VGAC).

Although volatilization is usually the primary removal mechanism for VOCs in conjunction with steam stripping, chlorinated ethanes (such as TCA) can be degraded in place by hydrolysis. Hydrolysis is a chemical substitution reaction in which hydrogen ions in water react with organic molecules, replacing chlorine atoms. Oxidizing conditions or available oxygen is not required for hydrolysis. Hydrolysis can be a significant degrader of some CVOCs at room temperature; especially halogenated alkanes. The rate of hydrolysis increases with temperature and clay soil types tend to accelerate hydrolysis.

## Section 3

### Chronology of Events

This section presents a tabular summary that lists the major events for the SERGC Area 4 project and associated dates of these events beginning with the ROD signature.

Date	Event
June 2002	EPA ROD for OU3
March 2004	Phase I Pre-Design Sampling Activities
August – December 2005	Phase II Pre-Design Sampling Activities
September 2005	Interim Soil Removal
October 6, 2010	Area 4 Leachate Component declared O&F
October 2011	Pre-design Sampling Activities
July 27, 2012	Explanation of Significant Differences
January 12, 2016	TRS on site at Area 4 to conduct a pre-design field study
April 11, 2016	Submittal of Area 4 Soil Component RD
June 30, 2016	Approval of Area 4 Soil Component RD
July 2016	RA mobilization and site preparation
July – October 2016	Installation of all appurtenances related to ERH Remedial Action (including multi-phase extraction electrode installation, equipment placement, and construction of all conveyance piping)
September 9, 2016	Marshall Street reopened for public access
October 3, 2016	Semiannual GMZ sampling/pre-RA groundwater sampling
October 11, 2016	Operational Readiness Review with U.S. EPA, Illinois EPA, TRS, Bodine Environmental Services, Inc. (Bodine), and CDM Smith
October 14, 2016	ERH system operations began (except for nine multi-phase extraction electrodes in Marshall Street)
November 9, 2016	Marshall Street repaved because of voltage potential issues
November 13, 2016	Nine multi-phase extraction electrodes connected to Power Control Unit (PCU). Full ERH application began
December 13, 2016	First round of soil confirmation sampling
January 16, 2017	Second round of soil confirmation sampling
January 23, 2017	Steam sparging system installed
February 16, 2017	Third round of soil confirmation sampling
February 22, 2017	Illinois EPA approves completion of treatment activities; TRS begins demobilizing ERH equipment off site
March 13, 2017	MPE electrodes abandoned in place
April 16, 2017	Final demobilization meeting held between U.S. EPA, Illinois EPA, Bodine, and CDM Smith
May 30, 2017	Semiannual GMZ sampling/post-RA groundwater sampling

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## Section 4

# Construction Activities

This section provides a summary description of the activities undertaken to construct and implement the Southeast Rockford Area 4 ERH RA including mobilization and site preparation; construction and installation of all Multi-Phase Extraction (MPE) electrodes, monitoring points, conveyance pipes, connections, appurtenances related to the connection between MPE electrodes, and the VR system; startup; and testing of the ERH system and VR system.

TRS Group, Inc., of Broadview Washington was the RA Contractor for the project.

## 4.1 Pre-Construction Activities

Prior to commencement of major construction activities at the Site, several activities were conducted, including trimming of trees, installation of orange construction fence, placement of the project office trailer, utility locating, and obtaining permits.

### 4.1.1 Site Preparation

Before work started at the site, a temporary security fence was erected around the site. This was later replaced with a permanent chain link fence and vehicle gate. After the fencing was installed, an existing interior loading dock on the western side of the building was removed so that MPE electrodes could be installed in the area. The broken concrete removed from this area was stockpiled inside of the existing building on site.

### 4.1.2 Utility Location and Modification

Prior to commencing construction activities, TRS contacted the Joint Utility Location Information for Excavators one call entity for marking subsurface utilities throughout the proposed work area. TRS also used another subcontractor, Blood Hound Underground Utility Locators to mark private utilities located on the site. During the remedial design process, utilities had been located and included on the design contract drawings. The onsite utility locate verified the location of utilities included on the design drawings.

Alongside the utility locate, ground penetrating radar was used to scan over each boring location in the treatment area.

### 4.1.3 Building Preparation

Before construction activities commenced, TRS made sure the existing building on site was secure in order to prevent unauthorized access to the building during construction and operations. This work included boarding up a broken window, placing locks on all entrance doors, and placing a lock on the inside of the garage door located on the south end of the building. Although unauthorized access to the building interior was noticed during the RA, it did not result in any impact to the RA.

#### 4.1.4 Permits

Prior to commencing construction activities, TRS obtained a Right of Way Permit (Permit #: ROW20161344) to perform work on Marshall Street. Under the permit, the portion of Marshall Street within the work area limits was shutdown to through traffic, but still accessible to residents that lived within the area. TRS obtained road barricades from Traffic Services, Inc., that were erected on the north and south sides of the closed street and temporary fencing, consisting of 6-foot high stand fence held in place with sand bags, was placed around the work area to keep unauthorized personnel from entering the work area. For the duration of work on Marshall Street, a road closed sign was posted at the north end of Marshall Street at the intersection with Harrison Avenue as well as detour signs that notified residents of an alternate route.

Work was completed on Marshall Street within the scheduled period of the permit and the road was reopened on September 9, 2016. A copy of the Marshall Street permit is included in **Appendix C**.

An electrical permit was also obtained by TRS. This permit allowed for the electrical connection from the PCU to the Commonwealth Edison electrical pole that was installed on site. TRS did not retain a copy of the electrical permit in its records.

#### 4.1.5 Temporary Facilities

A mobile site office trailer was placed by TRS at the south end of the existing building located on site. This trailer remained on site for the duration of the RA and was removed after remediation was complete. The trailer contained two locking external doors, work bench, cabinet storage spaces, and electrical connection. Temporary fencing was erected around the work area located in Marshall Street and was removed when permanent fencing was installed after completion of construction activities in Marshall Street.

### 4.2 Installation of Multi-Phase Extraction Electrodes, Vapor Piezometers, Groundwater Monitoring Piezometers, and Temperature Monitoring Points

This section summarizes construction activities associated with the installation of MPE electrodes and monitoring points at the site. Field activities associated with the RA were initiated on July 5, 2016. Drilling and installation of the electrodes and various monitoring points was performed by subcontractors Terra Probe Environmental, Inc. (Terra), of Ottawa Lake, Michigan and K&S Engineers, Inc. (K&S), of Highland, Indiana. Subsurface installations included 39 MPE electrodes, 8 vapor piezometers (VPs), 7 temperature monitoring probes (TMPs), and 8 groundwater monitoring probes (GWPs). Refer to Figure 1 in TRS' Final Report (Appendix B) for the locations of the electrodes and monitoring points.

Prior to the start of construction of the ERH system, on February 2, 2016, TRS requested that all electrodes and monitoring points that were not located in Marshall Street be installed above grade instead of the proposed below grade design. On April 27, 2016, CDM Smith and the Illinois EPA approved this change and authorized TRS to construct all MPE electrodes and monitoring points not located in Marshall Street above grade.

### 4.2.1 Multi-Phase Extraction Electrode Installation

Terra used a Geoprobe 6620 track-mounted rig to install MPE electrodes and monitoring points inside of the existing building on site and K&S used a Diedrich-120 truck-mounted drilling rig to install the remaining MPE electrodes and monitoring points outside of the building. Both subcontractors installed both MPE electrodes and monitoring points in a similar fashion. With the exception of boreholes located near suspected subsurface utilities, a pilot hole was advanced to 5 feet bgs with an 8.25-inch inside diameter (ID) hollow-stem augers (HSA) with a center plug on a 3-inch diameter rod. The HSA, with a wooden plug in the bit, was then used to drill the borehole to 39.5 or 40 feet bgs charging the HSA with water between flight connections after reaching 25 feet bgs. At locations near suspected subsurface utilities, K&S personnel used a hand auger to advance pilot holes to 5 feet bgs to verify utility clearance before advancing the 8.25-inch ID HSA. While the borings were being advanced, CDM Smith recorded the soil types and collected readings using a photoionization detector (PID) from the soil cuttings. Elevated PID readings were recorded between 32 feet bgs and 39 feet bgs which indicated that there were higher concentrations of contamination than originally expected at depth. This information is included in Appendix A. As field-level data generated from soil cuttings obtained during drilling, no quality review was performed on the information.

After the borehole was drilled, a 4-inch Schedule 40 black iron steel pipe with a protective coating and a capped end was lowered inside the HSAs, and a 50-pound bag of iron shot was poured into the HSAs and allowed to sink to the bottom. Batches of graphite/iron shot mixture consisting of one 50-pound bag of iron shot for every three 50-pound bags of SWS Earth Contact Backfill graphite was then poured into the HSA. The mixture was saturated with water in a wheelbarrow for batches to be used in the portion of the annulus that was below the water table. For MPE electrodes in remediation Zones 1 and 2, the top of the graphite/iron shot mixture was brought up to 2 feet above the top of the slotted interval. For MPE electrodes in remediation Zone 3, the top of the graphite/iron shot mixture was only brought up to 23 feet bgs. Then, #4 silica/bluestone sand was poured through the HSAs and into the annulus on top of the installed graphite/iron shot mixture. The borehole annulus was filled with sand up to 1 to 0.5 feet bgs. Refer to TRS's Final Report (located in Appendix B) for MPE construction logs.

The locations of MPE-B2, MPE-B3, MPE-B4, MPE-C2, MPE-C4, MPE-F5, MPE-K7, and MPE-L7 were moved up to 4 feet from the original proposed locations because of various subsurface and overhead obstructions. Relocation of these MPE electrodes did not impact the ERH system or its functionality. Refer to TRS's Final Report (located in Appendix B) for additional details about construction and location of MPE electrodes.

### 4.2.2 Vapor and Groundwater Piezometer Installation

Eight VPs and 8 GWPs were installed within and around the perimeter of the remediation area. All 16 VPs and piezometers were installed by K&S using a HSA drill rig. After VP installation was complete, TRS placed sample ports on top of the above grade piezometers.

Five VPs were completed above grade and three VPs were completed below grade. VPs were installed to 13 feet bgs. While the borings were being advanced, CDM Smith recorded the soil types and collected readings using a PID. The VPs were constructed of 0.5-inch schedule 80 CPVC pipe from 0 to 11 feet bgs and a 2-foot section of 0.5-inch V-wrapped stainless steel screen

(20 slot) from 11 to 13 feet bgs. A 0.5-inch stainless steel cap was attached to the bottom of the screen. #4 silica sand was poured into the bore hole by hand to 10 feet bgs and then grout was poured into the hole up to existing ground surface. Refer to TRS's Final Report (located in Appendix B) for additional construction details.

Six GWPs were installed above grade and two were installed below grade. GWPs were installed to a depth of 45 feet bgs. While the borings were being advanced, CDM Smith recorded the soil types and collected readings using a PID. The GWPs were constructed with a 2-inch V-Wrapped stainless steel well screen from 20 to 40 feet bgs. #4 silica sand was placed in the hole by hand to the bottom of the bore hole to 19.5 feet bgs with grout poured on top of the sand to existing ground surface. After installation, a groundwater transducer was placed in the well which was placed approximately 5 feet below the treatment area. A PVC protective sleeve was placed over the groundwater probe to keep rain water from entering the well. Refer to TRS's Final Report (Appendix B) for additional construction details.

There were two deviations from the original work plan. First, VP-C2 was moved approximately 10 feet to the west and 4 feet to the south of MPE-B4 because of a low hanging overhead utility line and due to an unknown and unmarked underground pipe. Second, GWP-L4 was moved 1.5 feet to the south because the original location was too close to the existing onsite building and the drill rig could not access the original location. The relocation of both of these monitoring points had no effect on the ERH system functionality. Refer to Figure 1 in TRS's Final Report (Appendix B) for final monitoring point locations.

### 4.2.3 Temperature Monitoring Point Installation

Seven TMPs were installed within the remediation area to measure subsurface temperatures during remediation. Six TMPs were completed above grade and one TMP was completed below grade. Terra installed two of TMPs and K&S installed the remaining five TMPs.

TMPs were installed using a 4.25-inch ID HSA fitted with a wooden knock out plug in the bit to a depth of 37 feet bgs. While the borings were being advanced, CDM Smith recorded the soil types and collected readings using a PID. Once at depth, the wooden plug was knocked out from the bottom of the HSA. A 1.5-inch diameter copper pipe (10.5-foot sections connected with soldered couplers) was then grouted into place with neat cement. Upon completion, the top of the copper pipe was approximately 1 foot above ground surface at all of the TMP locations except TMP-D3 located under Marshall Street. For this TMP, the copper pipe was cut off below grade and temporarily capped once the cement grout set.

One of the TMPs was installed in a revised location due to site conditions. The location of TMP-D3 was moved approximately one-foot west of the proposed location because the proposed location was only approximately 9 feet west of overhead power lines. This deviation from the original location did not affect the ERH system's functionality.

### 4.2.4 Electrode Drip System and Cooling Loop Installation

An electrode drip system consisting of 0.75-inch cross-linked polyethylene (PEX) tubing was connected to a solenoid which was then connected to the MPE electrodes located in Zone 1 and Zone 2. The purpose of the drip water was to keep the interface between the electrode and

surrounding soil moist for optimum electrical conductivity, with special focus on electrode elements with conductive intervals targeted across the unsaturated zone. In-line solenoids were wired to a solenoid field box to regulate the volume of water distributed in the immediate vicinity of each electrode via a 0.5-inch copper tube that was installed during MPE electrode installation.

On September 27, 2016, TRS installed a cooling loop inside groundwater extraction well EW003 to prevent heat damage to the pump within the extraction well. The cooling loop was placed in the trench network while it was still open and ran through the concrete vault of the extraction well (two 1-inch holes were drilled into the concrete). The cooling loop consisted of 0.75-inch PEX from 0 to 35 feet bgs and transitioned to 0.5-inch from 35 to 42.5 feet bgs. The cooling loop ran above ground from the exit trench, along the 4-inch CPVC blowdown line and connected to the north side of the condenser unit.

### 4.3 Trenching Activities

Trenching activities began on August 29, 2016. Diamond Cut Concrete Cutters of Villa Park, Illinois started by saw cutting a 30-inch wide cut in the asphalt connecting each MPE electrode location as well as a cut down to the Groundwater Extraction and Treatment System (GETS) vault. The trench network was run primarily in a north to south orientation with one leg of the trench heading in an east to west direction south of extraction well EW003, which is different than was indicated in the work plan and was done to avoid a potential encounter with any of Bodine Environmental Services, Inc. (Bodine's) pre-existing extraction well infrastructure. This deviation from the originally proposed trench layout did not affect the functionality of the ERH system.

TRS personnel used a small excavator, TB250, to peel back asphalt in Marshall Street. This asphalt was staged to the side for future recycling. The excavator was then used to excavate an approximately 26-inch wide by 30-inch deep network of trenches so that MPE electrodes, TMPs, GWPs, VPs and their respective conveyance pipe and cable could be installed under Marshall Street. While trenches were being dug at the site, temporary fencing was placed around the open trenches to keep unauthorized persons from entering the area. Soil removed from Marshall Street was loaded and placed in roll off dumpsters for eventual disposal at Winnebago Landfill in Rockford, Illinois. Refer to Appendix B for the special waste profile and the landfill weight tickets.

On August 31, 2016, TRS discovered a concrete stormwater pipe that runs north-south parallel to the row "D" MPE electrodes. TRS deviated from the newly proposed trench design and extended the easternmost north-south trench to the eastern side of the "D" row of MPE electrodes in an effort to not disturb the concrete pipe. This new trench design did not interfere with the functionality of the ERH system. Refer to Figure 1 in TRS's Final Report (Appendix B) for the updated trench locations.

Once the network of trenches was complete, electrode heads were placed on MPE electrodes; VPs were capped; groundwater piezometers had 90-degree angle fittings attached and groundwater transducers were placed down into the water table; and resistance temperature detectors were placed in one TMP well (TMP-D3). All below grade wells were constructed similarly to the above grade MPE electrodes, vapor and groundwater piezometers, and TMPs (refer to Section 4.2). Electrode cables (Type W 350) were connected to the MPE electrode heads and ran along the bottom of the trench to the exit point at the southeast side of the trench network. Two 1-inch



CPVC pipes were connected to all MPE electrode heads for simultaneous vapor and water recovery, 1.5-inch CPVC pipe was connected to VP-B4, 1.25-inch CPVC pipe was connected to TMP-D3, and 1.25-inch CPVC pipes were connected to GWP-B4 and GWP-C3. All CPVC pipes were laid at the bottom of the trench and ran to the exit point where they exited the trench and came above grade.

After completion of below grade work, TRS had flowable backfill (Illinois Department of Transportation specification 2364) and concrete (rated at 4,000 pounds per square inch [psi]) delivered to the site by Ozinga. The flowable backfill was poured into the trench by the truck and spread by TRS personnel. Flowable backfill was placed to approximately 4-inches bgs. Concrete was then poured on top of the backfill and smoothed by TRS personnel.

Coinciding with the trenching activities in Marshall Street, a trench was extended to the north along the west side of Marshall Street so that the condensate blowdown line (4-inch CPVC) and communication cable could be connected to the existing GETS system vault operated by Bodine. This blowdown line was set into place so that effluent from the ERH system could be treated by the GETS. Two holes, a 6-inch hole and a 1-inch hole, were cored into the side of the concrete vault. The CPVC pipe was placed in the 6-inch diameter hole and hydraulically cemented into place and the communication cable was run through the 1-inch diameter hole and hydraulically cemented into place. Before the condensate blowdown line was fully connected, TRS performed a pressure test on the line to check for any leaks or compromised joints. TRS performed this pressure test by connecting ball valves at both ends of the line and filling the line with water which created approximately 40 to 70 psi inside the pipe. Once the whole line was filled with water, the ball valves were closed and the water was allowed to sit in the line for approximately one hour. At the end of this time, TRS personnel walked the line to check and see if there were any leaks. No leaks were present and the condensate blowdown line was deemed operational.

Marshall Street was reopened to the public and returned to normal traffic patterns on September 9, 2016. This section of Marshall Street was also repaved due to operational reasons which is described in Section 4.5.1.

## 4.4 Equipment Delivery and Connection

Throughout the course of the ERH system construction, TRS placed each piece of the ERH process equipment on the site. Process equipment that was mobilized to the site is listed below:

- PCU
- Condenser/cooling towers
- 40-horsepower (hp) vacuum blower
- Two auto-transformers
- VGAC roll off
- Two liquid-phase granular activated carbon (LGAC) vessels

On September 22, 2016, the PCU, condenser/cooling towers, 40-hp vacuum blower, two auto-transformers, and two LGAC vessels were delivered and placed onsite. Creative Crane and Rigging (Creative Crane) used a GMK-5240 crane to place equipment at the direction of TRS personnel. Equipment was delivered via semi-truck and was picked up from the bed of the semi by Creative Crane and placed on site. Refer to Figure 1 in Appendix B for locations of each piece of equipment. On October 6, 2016, a 13,000-pound VGAC rolloff was delivered to the site. The rolloff was approximately 20 feet by 8 feet and separated into two different chambers (acting as two vessels). It was installed on the effluent side of the VR blower in series (primary and secondary chambers).

After all the equipment was delivered and placed in its respective spot on site, TRS began connecting each piece of equipment together. Conveyance piping was connected to each of the MPE electrodes which consisted of 0.25-inch CPVC up to 2-inch CPVC pipe. These conveyance pipes were then run across the site and connected to a 6-inch CPVC VR pipe which was connected to the north side of the condenser unit. A blower in (6-inch PVC) pipe was connected from the south end of the condenser unit and ran to the 40-hp blower located inside of the building and a blower out pipe (6-inch CPVC) was ran from the 40-hp blower out of the building and connected to the VGAC rolloff located just in front of the vehicle gate. A process flow diagram is included in Appendix B.

Type W 350 electrode cables were connected to the PCU by bolting one end of the cable to an Amp-Trap which was then attached to its respective phase plate; first, second, or third phase, with the other end of the cable bolted to the top of its respective MPE electrode head.

A security system was installed along the fence line that surrounds the equipment and treatment area and consisted of 5 motion-detecting sensors as well as 9 motion activated cameras. The security system, once armed, recorded if movement was detected within the coverage area.

## 4.5 Operational Construction

This section discusses additional construction activities that occurred at Area 4 while the ERH system was operating.

### 4.5.1 Marshall Street Construction

Stray voltage issues that were present in Marshall Street led to the subsequent repaving of the entire trench network. On November 9, 2016, Stenstrom Excavation & Blacktop was on site to mill and repaved a section of Marshall Street measuring 40 feet by 121.5 feet that encompassed the entire network of trenches.

### 4.5.2 Steam Sparging System Construction

On January 17, 2017, TRS installed five steam sparge points at Area 4 following the second round of soil confirmation sampling. This steam sparging system was installed because of insufficient heating at depth which resulted from a suspected higher hydraulic conductivity that exists below 30 feet bgs.

These steam sparge points were constructed with a 0.75-inch copper pipe that was slotted along the bottom 2 feet. These steam sparge points were installed at GP-01 and GP-08 to 42 feet bgs and

GP-06, GP-09, and a new point between MPE-E4 and MPE-E5 to 39 feet bgs via direct push technology. After the copper pipe was installed in the borehole, with the slotted interval surrounded by native soil, concrete was mixed and placed in the hole to keep the steam sparge points in place. On January 23, 2017, TRS began construction of the steam sparge system. On January 24, 2017, a 5-hp Atlas GX4FF air compressor was delivered to the site. An 0.5-inch black iron steep pipe was connected to the air compressor, located inside of the existing building and ran through the building and exited the building near the former loading dock. At the exit point, the pipe was connected to 3 solenoid valves which connected to the 3 steam sparge points (GP-01, GP-06, and GP-09) via a rubber hose. At each steam sparge point, one 0.75-inch copper 90-degree angle fitting was attached to the 0.75-inch copper pipe in the ground with a reducing 0.5-inch copper 90-degree fitting attached to the other end. A flow sensor was then attached to the 0.5-inch copper 90-degree fitting with a copper barb and another copper barb at the bottom for a rubber hose connection. The rubber hose was then connected with a pipe clamp with the other end of the hose connected to a solenoid valve attached to a timer. Air was added for approximately 1 hour at each steam sparge point in consecutive cycles regulated by a timer for a 24-hour period.

## Section 5

# Operational Readiness Review and Electrical Resistance Heating System Start Up Operations

This section summarizes ERH system startup operations as well as the Operational Readiness Review that was conducted on site.

## 5.1 ERH Startup Operations

On October 5, 2016, TRS began running through its startup checklist, available in TRS's Final Report (located in Appendix B). This checklist contains action items that were required to be complete before the ERH system could begin operation. Action items on the startup check list included health and safety checks, proper function of equipment and alarms, security system functions, voltage potential testing, and SERT.

### 5.1.1 Health and Safety

Health and safety meetings were held daily while the ERH system was being constructed and before any intrusive site work was started. Refer to Appendix B for TRS's Health and Safety Plan.

### 5.1.2 Process Equipment Functionality Tests

TRS performed checks on all process equipment located on site. The condenser was filled with water from a potable water source located on site. Items inspected included leak checks, functionality of float switches and valves, and the condenser's ability to maintain normal operations. Float switches were checked in order to assess that the alarms were functioning properly. If an alarm was triggered inside of the unit, the system would stop discharging water to the GETS.

### 5.1.3 Security System Functionality Tests

Security system functionality tests were performed by TRS by arming all perimeter sensors and cameras and having personnel disrupt the sensor barrier and monitoring that electrical service was discontinued and the PCU contactor opened. This was done to simulate a scenario where an unauthorized person was onsite.

### 5.1.4 Voltage Potential Testing

TRS started performing voltage testing on October 6, 2016. TRS first supplied the treatment area with approximately 130 volts (V) of electricity. While the field was being powered, only authorized TRS personnel were allowed in the treatment area. TRS used a volt meter and the "step and touch" method as described in TRS's Final Report (located in Appendix B). By using this technique, TRS found stray voltage issues at the following site features:

- Metal pipe sticking from building measured at 32 V.
- Metal on solenoid attached to MPE-J4 measured at 40 V.

- Concrete seal in Marshall Street consistently measured above 5 V.
- Concrete over abandoned multi-extraction well (MLW001) measured above 10 V.
- Grout around over sleeves inside of the building consistently measured above 10 V.

Presented below are the ways the sources of the voltage issues were either mitigated or completely removed:

- The metal pipe sticking from the building was removed and discarded.
- The solenoids in Zone 2 were wrapped in foam pipe insulation and securely taped with electrical tape.
- Rubberized sealant was sprayed by hand on concrete seal above each electrode.
- A rubber mat was placed over abandoned multi-extraction well (MLW01).
- The grout inside of the building and the concrete trench in Marshall Street were both sprayed with a rubberized spray.

After further testing, voltage potential was still an issue on the trench concrete seal in Marshall Street. Next, TRS applied another rubberized sealant to the concrete with paint rollers. After the rubberized sealant was set, another round of voltage testing was performed on Marshall Street. After the testing was complete, voltage potential issues were still present in Marshall Street.

On October 12, 2017, while voltage testing was continuing in Marshall Street, Illinois EPA authorized TRS to begin operating the ERH system (see Section 5.2), but because of the voltage potential issues that were still present in the street, the nine below grade MPE electrodes remained offline.

On November 9, 2016, Stenstrom Excavation & Blacktop was on site to mill and repave a section of Marshall Street measuring 40 feet by 121.5 feet that encompassed the entire network of trenches. After this segment of Marshall Street was repaved, a final round of testing was successfully completed.

On November 13, 2016, the nine below grade MPE electrodes (MPE-B2, MPE-B3, MPE-B4, MPE-C2, MPE-C3, MPE-C4, MPE-D3, MPE-D4, and MPE-D5) were connected to the PCU and brought back into service.

## 5.2 Operational Readiness Review

On October 11, 2016, a readiness review was conducted on site with TRS, CDM Smith, Illinois EPA, U.S. EPA, and Bodine. This readiness review was held to obtain authorization from the Illinois EPA to operate the ERH system at full capacity. On October 12, 2016, the Illinois EPA deemed the Area 4 soil component RA operationally ready and gave TRS permission to start operation of the ERH system. The ERH system began operating on October 17, 2016.

## Section 6

# ERH System Operation and Maintenance

This section summarizes the general activities and unforeseen issues that occurred during the ERH system operation.

## 6.1 Weekly ERH System Monitoring and Operation and Maintenance

Throughout system operation, TRS made weekly visits to the site to operate and maintain the ERH system. During these visits, operational data was collected, maintenance was performed on the system (such as insulating water lines for cold weather, changing bag filters, system updates), and general site upkeep was completed. See TRS's Final Report (located in Appendix B) for full operational data.

### 6.1.1 Weekly Monitoring and Sampling

During system operation, TRS monitored both vapor and water stream processes on site. A PID was used to monitor the vapor stream for presence of VOCs. The PID was also used to collect two rounds of VOC data at each of the MPE electrodes, although suspected interference was encountered due to the presence of steam in the vapor stream. PID data collected at MPE electrodes are summarized in **Table 6-1**.

**Table 6-1. PID Concentrations in MPE Electrodes  
SE Rockford Area 4 ERH Soil Component**

MPE Electrode	PID Reading (PPM)	PID Reading (PPM)
	11/30/2016	12/7/2016
B2	0.0	0.0
B3	0.0	0.0
B4	0.0	0.0
C2	3.3	19.1
C3	1.1	11.2
C4	1.9	12.3
D3	12.8	43.1
D4	20.1	25.3
D5	1.6	12.0
E3	8.3	39.4
E4	15.8	11.1
E5	5.3	18.7
F3	1.4	62.9
F4	86.6	17.9
F5	31.8	64.8
G2	10.4	21.6

MPE Electrode	PID Reading (PPM)	PID Reading (PPM)
	11/30/2016	12/7/2016
G3	57.7	230.3
G4	152.1	167.4
G5	69.3	56.8
H2	63.6	62.3
H3	35.9	72.7
H4	240.2	352.1
H5	133.9	116.4
H6	91.2	109.1
J3	101.0	81.4
J4	250.0	54.1
J5	95.0	227.9
J6	30.0	32.4
K3	16.0	100.4
K4	15.0	121.8
K5	52.0	248.7
K6	47.0	82.7
K7	35.0	78.0
L4	25.0	68.4
L5	2.0	105.0
L6	6.0	132.3
L7	3.0	23.4
M5	14.0	34.6
M6	27.0	48.9

ppm – part per million

Summa canisters were collected from the vapor discharge of the condenser weekly for the first month and bimonthly thereafter. Aqueous samples were also collected on the effluent side of the LGAC vessel weekly for the first month and bimonthly thereafter. Aqueous samples were analyzed by EPA Method 8260B. All data collected (except for the PID data collected at the MPE electrodes) at the site by TRS is summarized in their final report located in Appendix B.

### 6.1.2 Weekly Reporting

Throughout system operation, TRS provided weekly monitoring reports. These reports described the general operation of the ERH system, work performed during the previous week, conformance with applicable vapor and water discharge limits, and anticipated upcoming work. The reports also contained data on the following operational parameters:

- Flowrate and total flow of recovered vapors
- Flow rate and total flow of water discharged to the GETS
- Analytical data
- Contaminant mass removal (rate and total)

- Subsurface temperatures (site average and individual TMP data)
- VP data
- Groundwater piezometer data
- Power and energy data

Refer to Appendix B for all TRS weekly reports.

## 6.2 Sulfate Reducing Bacteria

A problem that arose during the operation of the ERH system was the presence of sulfate reducing bacteria (SRB) in process water that was being discharged to the GETS. (Operational difficulties with the GETS caused primarily by iron reducing bacteria, and SRB to a lesser extent, resulting from reductive dechlorination of contaminants in the aquifer have occurred almost since the GETS was turned on.) The SRB was being caught and thus clogging the bag filters in the GETS treatment system. Prior to ERH operation the bag filters were being changed weekly, but at its worst the filters needed to be changed every 24 hours.

TRS made some modifications to their system which included being able to recirculate process water through the two LGAC vessels then through two 25-micron bag filters that were placed in parallel. After going through the two bag filters, the water was sent up to the two cooling towers located on top of the condenser unit before ultimately being sent to the GETS. By making this adjustment, TRS could minimize the amount of water sent to the GETS. On November 15, 2016, TRS installed a 6,000-gallon process tank so that in the event the GETS shut down, TRS could pump excess water to the tank instead of the ERH system shutting down. This measure was taken after experiencing multiple ERH system shutdowns over several weeks. After the process tank was installed, the ERH system ran mostly uninterrupted.

## 6.3 Vapor Carbon Change Out

On November 22, 2016 Evoqua was onsite to change out the vapor carbon located in the roll off on site. Evoqua used a vacuum and extension to suction out the spent carbon inside of the roll off and placed it into bags. After the spent carbon was placed into the bags, new carbon was dumped into the roll off using a mechanical lift. The spent carbon was submitted for landfill approval and taken off site on February 1, 2017.



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## Section 7

# Performance Standards and Construction Quality Control

### 7.1 Confirmation Soil Sampling

The following section details the three rounds of confirmation sampling that occurred on site. With one exception, confirmation sampling by TRS and CDM Smith was conducted in accordance with each contractor's respective Sampling and Analysis Plans (SAP) or Quality Assurance Project Plans (QAPP). The exception was that instead of the lowest confirmation sampling interval being 32 feet bgs in each boring, a limited number of sampling interval depths were increased to 37 feet bgs to confirm that deeper contamination observed during construction installation had been sufficiently treated.

Each sample collected by TRS and CDM Smith was collected using three 5-gram EnCore™ samplers. TRS collected soil samples for quick turn-around VOC (SW-846 8260B) analysis by its subcontract laboratory, Test America, Inc. CDM Smith collected soil samples for analysis by two different laboratories to verify TRS' analytical results. CDM Smith submitted samples for quick turn-around VOC (SW-846 8260B) analysis to its subcontract laboratory, STAT Analysis, Inc. (STAT) and for standard turn-around target compound list (TCL) VOC (SOM02.3) analysis through U.S. EPA's Contract Laboratory Program (CLP). All TRS and CDM Smith analytical data was evaluated and validated as described in Section 7.5.

Data from each round of confirmation sampling were compared to the RGs for the COCs established in the ROD. Samples with all COC concentrations below the RGs were considered to have "passed," signifying that treatment at that sampling location/interval was complete. Conversely, samples with any COC concentration above RGs was considered to have not passed and further treatment and confirmation sampling was necessary at that sampling location/interval.

Summarized soil analytical results are shown in **Table 7-1** through **Table 7-6**.

#### 7.1.1 First Round of Confirmation Soil Sampling

On December 13, 2016, the first round of soil confirmation sampling began at Area 4. Prior to the start of sampling, the entire system was de-energized. Terra was the subcontractor that was used for this phase of work.

A total of 18 soil borings were advanced at Area 4 using direct push technology. Confirmation soil samples were collected from four locations in Zone 1, four locations in Zone 2, and ten locations in Zone 3. Investigation locations, sample depths, and laboratories that received samples for the first round of soil sampling are listed in the sampling summary table below.

Investigation Location	Sample Depth (ft)	Test America (TRS)	STAT	CLP
GP-01	37	X	X	
GP-02	37	X		X
GP-03	32	X		X
GP-04	32	X		
GP-05	32	X		
GP-06	32	X		
GP-07	32	X		
GP-08	37	X	X	
GP-09	32	X	X	
GP-10	32	X		
GP-11	8	X		
	16	X		
	24	X	X	X
	32	X	X	X
GP-12	8	X		
	16	X		
	24	X		
	32	X	X	
GP-13	8	X		
	16	X		
	24	X	X	X
	32	X	X	X
GP-14	8	X		
	16	X		
	24	X	X	X
	37	X	X	
GP-15	8	X		
	16	X		X
	24	X		
	32	X		X
GP-16	8	X		
	16	X		
	24	X		
	32	X		
GP-17	8	X		
	16	X		
	24	X		
	32	X		
GP-18	8	X		
	16	X		
	24	X		X
	32	X		

Note: Samples with COC concentrations above RGs are shaded.

The results are compared to the RGs for the COCs established in the ROD. Samples collected from borings GP-01, GP-03, GP-06, GP-08, GP-09, GP-13, GP-15, and GP-17 contained PCE and 1,1-DCE that exceeded the respective RGs indicating that additional treatment was required. Therefore,

electrical energy input to the MPE electrodes nearest those sampling locations was continued. TRS modified the ERH system on December 27, 2016. These modifications resulted in the following MPE electrodes remaining in operation:

- MPE-D4
- MPE-D5
- MPE-E4
- MPE-E5
- MPE-F4
- MPE-F5
- MPE-G4
- MPE-G5
- MPE-H4
- MPE-H5
- MPE-H6
- MPE-K6
- MPE-K7
- MPE-L5
- MPE-L7
- MPE-M5
- MPE-M6

All other remaining MPE electrodes were disconnected from the PCU to reduce the energy input to the areas from which samples collected had met RGs.

### 7.1.2 Second Round of Confirmation Soil Sampling

The second round of confirmation soil sampling was conducted on January 16, 2017 and January 17, 2017. All soil samples were collected in the same manner as in the first round of confirmation sampling and split with CDM Smith. Investigation locations, sample depths, and laboratories that received samples for the second round of soil sampling are listed in the sampling summary table below.

Investigation Location	Sample Depth (ft)	Test America	STAT	CLP
GP-01	37	X	X	X
GP-03	32	X	X	X
GP-06	32	X	X	X
GP-08	37	X	X	X
GP-09	32	X	X	X
GP-15	32	X	X	X
GP-17	32	X		X

Note: Samples with COC concentrations above RGs are shaded.

A soil sample collected from GP-17 was not submitted to STAT because of limited soil recovery from the boring. Prior to the start of sampling, the contactor on the PCU was opened discontinuing electrical service to the treatment volume.

Following the second round of confirmation sampling and while waiting for analytical results, the following MPE electrodes remained in operation per the request of the Illinois EPA: MPE-G3, MPE-G4, MPE-G5, MPE-H4, MPE-H5, and MPE-H6. These MPE electrodes were requested to remain in operation because this area had the highest concentrations of contamination as seen from the first round of confirmation sampling and Illinois EPA did not want to “lose ground” by allowing the ground to cool while waiting for analytical results.

Samples collected from GP-01 had concentrations of PCE that exceeded the RGs at 37 feet bgs, GP-06 had concentrations of PCE and TCE that exceeded the RGs at 32 feet bgs and GP-09 had concentrations of PCE that exceeded the RGs at 32 feet bgs. Because concentrations of PCE either

increased or remained constant at depth, a steam sparging system was installed as discussed in Section 4.5.2 to more aggressively target the deepest intervals following the second round of confirmation sampling.

After the analytical results were received, the following MPE electrodes remained in operation in conjunction with the steam sparging system:

- MPE-F4
- MPE-F5
- MPE-G3
- MPE-G4
- MPE-G5
- MPE-H3
- MPE-H4
- MPE-H5
- MPE-H6
- MPE-J4
- MPE-J5
- MPE-J6

### 7.1.3 Third Round of Confirmation Soil Sampling

On February 16, 2017, a third round of confirmation samples were collected at Area 4. All soil samples were collected in the same manner as the first and second round of confirmation sampling and all samples were split with CDM Smith. Prior to the start of sampling, the contactor on the PCU was opened discontinuing electrical service to the treatment volume and the steam sparge system was turned off. Investigation locations, sample depths, and laboratories that received samples for the third round of soil sampling are listed in the sampling summary table below.

Investigation Location	Sample Depth (ft)	Test America	STAT	CLP
GP-01	37	X	X	X
GP-06	32	X	X	X
GP-09	32	X	X	X

PCE was still detected in GP-01 at 37 feet bgs but was reported below the established RGs. All other samples collected reported analytes below RLs.

### 7.1.4 Soil Data Conclusions

Overall, there was a reduction in COC concentrations as seen throughout the three rounds of soil confirmation sampling. As stated in the TRS Final Report, the overall average percent of reduction was 99.97 percent when using the laboratory “minimum detection limit” for each COC as the basis of the calculation. However, this calculation used maximum concentration from data that was collected by CDM Smith in 2004.

Although significant reductions in COC concentrations were observed, especially with the addition of the steam sparging system, it is unknown whether that reduction percentage is accurate given the baseline data used in the calculation is 13 years old, lower concentrations have been observed in soil samples collected more recently, and natural attenuation processes are known to be occurring at Area 4. Although CDM Smith does not consider the use of this old data as strictly wrong or incorrect, the resulting reduction percentage is qualified as likely biased high.

## 7.2 Electrical Energy Application

A total of 1,356,100 kilowatt hours (kWh) of energy were applied to the treatment volume which exceeded the original estimate of 790,000 kWh by approximately 566,000 kWh. This was a result of the extended run time of the ERH system to allow for remediation of contamination at the bottom of the treatment volume. As is stated in the TRS Final Report, the average power level during energy application, when considering downtime, was 493 kilowatts (kW) which was less than the original TRS estimate of 616 kW. This lower power level was achieved because the system ran at a lower power for approximately 2 months after the first round of soil confirmation sampling was conducted until the system was turned off in February 2017.

## 7.3 ERH System Waste

During system operations, a total of 214,685 gallons of condensate water and entrained liquid were generated by the ERH system. Of the 214,685 gallons, 112,279 gallons were discharged to the GETS. The remaining 102,406 gallons of liquid was condensate water that was generated by the ERH system and was recirculated through the drip line system connected to MPE electrodes in Zones 1 and 2 with a small percentage of that condensate evaporated through the two cooling towers located on top of the condenser unit.

## 7.4 Groundwater Sampling

This section describes GMZ sampling activities that occurred prior to ERH application as well as post ERH application. Semiannual GMZ sampling events were scheduled to be conducted just before and after ERH application to provide an indication of the ERH RA's short timeframe impact on the contaminated, shallow groundwater below Area 4. Extraction well EW003, as the well closest to Area 4 and historically most contaminated, was the focus of the evaluation. Analytical results for both rounds of GMZ sampling are provided in **Table 7-7**.

### 7.4.1 Pre-RA Groundwater Sampling

On October 3, 2016, CDM Smith conducted semiannual GMZ groundwater sampling as part of the Area 4 leachate component remedy prior to the start of the ERH system. Eight groundwater monitoring wells and one groundwater extraction well (EW003) were sampled in accordance with the Area 4 GMZ planning documents. 1,1,1-TCA exceeded its RG in EW003 and bromodichloromethane exceeded the RG in MW-32. However, MW-32 is an upgradient background well and the detection of bromodichloromethane in this well is almost certainly unrelated to Area 4.

### 7.4.2 Post-RA Groundwater Sampling

On May 30, 2017, CDM Smith conducted another semiannual GMZ sampling event at Area 4 once the soil component of the Area 4 RA was complete. Eight groundwater monitoring wells and three groundwater extraction wells (EW001, EW002, and EW003) were sampled. Only one compound, bromodichloromethane, exceeded the RG in MW-32. All other concentrations were reported below the RGs.

### 7.4.3 Groundwater Data Conclusions

The groundwater data depicts a decrease in COC concentrations, especially concentrations of 1,1,1-TCA in EW003. EW003 had a concentration of 210 micrograms per liter (µg/L) before ERH operations and a concentration of 6.1 µg/L after ERH operation. Overall, the data appears to show that the RA was effective in treating groundwater contamination and reducing COC concentrations to below applicable RGs.

## 7.5 Data Evaluation and Usability

As specified in the original QAPP, field duplicates were taken at a rate of 1 per 10 natural samples (i.e., 10 percent) and matrix spike/matrix spike duplicate (MS/MSD) samples at the rate of 1 per 20 samples (i.e., 5 percent).

A data evaluation/validation review was conducted on the Rockford Area Four soil data. Quality assurance (QA) objectives for data are expressed in terms of measurement performance data quality indicators, precision, accuracy, representativeness, comparability, completeness, and sensitivity (PARCCS). QA objectives provide a mechanism for ongoing quality control (QC) and evaluating and measuring data quality throughout the project. These QA objectives are outlined in the QAPP (CDM Smith 2016).

A review of the collected data is necessary to identify if the measurement performance criteria established in the QAPP have been met. In general, the following data measurement objectives were considered:

- Achievement of analytical method and reporting limit requirements
- Adherence to and achievement of appropriate laboratory analytical QC requirements
- Achievement of required measurement performance criteria for data quality indicators (PARCCS)
- Adherence to sampling and sample handling procedures
- Adherence to the sampling design and deviations documented on field change notifications

Data verification, data validation, and data assessment were used to verify adherence to the QAPP procedures and requirements. These assessments were used to reconcile the planned objectives detailed in the QAPP against the investigation results. The outputs serve to verify that the collected data are of sufficient quality to support their intended use.

### 7.5.1 Sample Analysis

Test America Laboratories Inc., University Park, Illinois; STAT Analysis Corporation, Chicago, Illinois; and the USEPA Contract Laboratory Program, Chemtech Consulting Group, Mountainside, New Jersey provided all volatile organic compound analyses.

There were five data packages from Test America, six data packages from STAT and three data packages from Chemtech. Each laboratory analyzed a subset of the same samples in order to confirm the sample results for the site. In accordance with the QAPP, the Test America and STAT

data were validated at a Level IV validation. The CLP data was validated by the USEPA. CDM Smith reviewed the CLP validation reports and verified the sample results and applied qualifiers.

Field duplicates and MS/MSD samples were collected during the sampling events. The laboratories performed field duplicate and MS/MSD analyses as required by the methods. The individual data validation reports in **Appendix D** show the field duplicate samples and relative percent differences (RPD).

The level IV validation was performed following the National Functional Guidelines for Organic Superfund Methods Data Review (USEPA 2017). Some of the earlier data packages were validated with previous versions of the guidelines. For this report, all the data was reviewed against the latest 2017 guidelines and any required changes have been appropriately addressed. Data validation reports for the 14 validated packages are provided in Appendix D.

## 7.5.2 Validation Summary

Specific details of the validation are provided in Appendix D. In summary, some analytes were qualified as estimated (J/UJ), estimated biased high (J+) or biased low (J-) and/or non-detect (U), based on validation criteria. No sample results were rejected. A summary of the qualifications is provided in the following section.

### Test America Data

SDGs: 680-121487-01; 680-121487-02; 500-121609-01; 500-122698-01; J124029-01

- Applicable sample results for 1,2-dichloropropane, carbon disulfide and chloroethane were qualified as estimated (J/UJ) based on laboratory control sample criteria.
- 1,1,2,2-Tetrachloroethane matrix spike percent recovery was outside of criteria for samples in one sample delivery group (SDG). The associated sample results were nondetect so no qualification was required.
- Applicable detected sample results for benzene, chlorobenzene, ethylbenzene, toluene and xylenes were qualified as estimated biased high (J+) based on surrogate recovery criteria.

### STAT Data

SDGs: 16120484; 16120511; 17010423; 17010472; 17020519; 17050731

- Associated sample results for methylene chloride, acetone, carbon disulfide and 2-butanone, were qualified as estimated (J/UJ) based on initial and continuing calibration results.
- 1,1,2,2-Tetrachloroethane, 2-hexanone, bromoform, ethylbenzene and tetrachloroethene were detected in the method blank for one SDG. No qualifiers were required though as associated sample results were either nondetect or greater than the blank action criteria. Trichloroethene was also detected in a method blank. All associated sample results were nondetect so no qualifiers were required. Ethylbenzene, toluene and chloroform were detected in another SDG method blank. Associated sample results for toluene were



qualified as nondetect. Ethylbenzene and chloroform results were nondetect in the associated samples so no qualifiers were required. Methylene chloride was detected in another SDG method blank. It was detected in 3 of the associated samples and was qualified nondetect (U).

- Applicable sample results for carbon disulfide were qualified as estimated (J/UJ) based on laboratory control sample criteria.
- Applicable 1,1,2,2-tetrachloroethane results were qualified as estimated biased high (J+/UJ) based on internal standard criteria.
- Bromoform, carbon tetrachloride, chlorobenzene, ethylbenzene, styrene, toluene, and total xylenes, results in sample A4-GP12A-161215 were qualified as estimated (J/UJ) based on matrix spike recovery results. 1,1,2,2-tetrachloroethane was also outside of matrix spike recovery criteria (high) but the sample result was nondetect so no qualifiers were required. Bromomethane, chloroethane and 1,1,2,2-tetrachloroethane matrix spike recoveries were also outside of criteria for sample A4-GP008A-170117. Sample results were qualified as estimated (J/UJ) except for 1,1,2,2-tetrachloroethane as that result was nondetect and not require qualification. The matrix spike recoveries for 1,1,2,2-tetrachloroethane, 2-hexanone, 4-methyl-2-pentanone, bromoform, styrene and xylenes were outside of criteria (high) for sample A4-GP09A-170216. Sample results for styrene, bromoform, and xylenes were qualified (J/UJ) and all other results were nondetect so qualification was required.
- Applicable sample results for benzene, chlorobenzene, ethylbenzene, toluene and xylenes were qualified as estimated biased low (J-/UJ) based on surrogate recovery criteria.

#### CLP Data

SDGs: E3Y20; E3Y31; E3Y39

- Methylene chloride was detected in the method blanks. Applicable sample results were qualified as nondetect (U).
- Surrogate recoveries were outside of criteria (high) for a few of the samples. Associated detected sample results were qualified as estimated biased high (J+). Nondetect results did not require qualification. Surrogate recoveries were also outside of criteria (low) for a few of the samples. Associated sample results were qualified as estimated (UJ).
- Some internal standard recoveries were outside of criteria. Associated sample results were qualified as biased high (J+/UJ). Some internal standards were below the appropriate criteria. Detected results were qualified as biased high (J+).
- The initial calibration result for o-xylene was outside of criteria. The associated sample results were nondetect so no qualification was required.

In summary, most of the validated and reviewed data are suitable for their intended use for site characterization. Two results for 1,2-dibromo-3-chloropropane were rejected in the CLP samples

A4-GP11B-161215 and A4-GP15B-161214. Sample results that were qualified as estimated are usable for project decisions. Results that have been rejected are not usable for project decisions.

### 7.5.3 Laboratory Analytical Results Comparison

Split samples were analyzed between STAT, Test America and CLP laboratories. Not all split samples were analyzed between all three laboratories.

For Round 1 data, split sample results between the three laboratories, STAT, Test America and CLP have comparable sample results for most of the samples. There were a couple of samples between Test America and CLP where the differences between the results above the remediation goal were not as precise as other results. In these cases, the Test America reporting limits were higher than the CLP reporting limits. Even though the precision between the detected values for samples analyzed by these two laboratories is not as comparable as other results, there doesn't seem to be any major deficiencies in data quality as variability is common between samples and laboratories. Using the highest detected value between these results for project purposes is a conservative approach. The reporting limits between the laboratories were the most similar between STAT and CLP in most of the sample comparisons.

For Round 2 data, the reporting limits were both higher for STAT and CLP results for the majority of the samples. Test America reporting limits were lower in most cases and similar to the reporting limits in Round 3. Most of the detected results that were above the remediation goal had good duplicate precision between the laboratories. One sample had a larger discrepancy between the laboratory results for PCE. As the detected concentrations were below or near the remediation goal this does not indicate data quality objectives are compromised.

For Round 3 data, the split sample results between the three laboratories, STAT, Test America and CLP have comparable sample results. Only one sample had a detected result from STAT while the other sample results were nondetect. The detected result for tetrachloroethene was below the reporting limit but above the method detection limit. It was also below the remediation goal. When sample results are close to the reporting limits, it is common practice to review the difference between the results. In this case, the difference between the two results is less than (two times – common soil limit) the reporting limit indicating good precision between the two results.

The reporting limits for STAT and CLP laboratories were consistently more similar and lower than the Test America results. This is not unexpected as variability between laboratories is common due to instrument sensitivities and capabilities.

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## Section 8

# Final Inspections and Demobilization

### 8.1 Equipment Demobilization and Well Abandonment

On February 22, 2017, CDM Smith along with the Illinois EPA completed a final review of analytical data received from the third round of confirmation sampling and notified TRS that they may discontinue ERH application and begin demobilizing equipment off site.

On February 23, 2017, TRS began disconnecting all cables from the MPE electrodes, disconnecting and cutting all conveyance pipes on site, and disconnecting all monitoring equipment. All large equipment (PCU, blower, condenser unit, cooling towers, etc.) was mobilized off site on March 7, 2017.

On March 13, 2017, TRS began to abandon all above grade monitoring wells. TRS first broke the grout seal around each of the above grade MPE electrodes and monitoring points to expose the below ground piping. A miniature excavator was then used to excavate down approximately 3 feet bgs next to each point. After the casing was exposed, Jackson Welding was on site to cut each MPE electrode and monitoring point approximately 2 feet below grade. After the casing was cut, TRS used the miniature excavator to lift on the black iron steel pipe so that the attached copper extraction pipe could be cut into smaller lengths.

On March 22, 2017, PJ's Concrete Pumping Services was on site to abandon all MPE electrodes and monitoring points. Each MPE electrode and all monitoring points were abandoned using a concrete mixture delivered to the site by Ozinga. Concrete was poured from the truck into a pump provided by PJ's Concrete which was then used to slowly pump the concrete mixture into each point that needed to be abandoned. The concrete mixture was allowed to settle for a period of time before it was topped off. Once each point was abandoned, excavated material was placed back in the surrounding excavated area up to 6 inches below existing grade and topped with the concrete mixture until it was flush with the surrounding grade. All below grade wells were abandoned by pumping a concrete slurry through the conveyance pipes to each below grade well until they were completely full. Once the conveyance pipes were filled, each CPVC pipe was cut below existing grade and the area was topped with Portland Type 1 cement.

Two drums of spent carbon were placed inside of the building for storage until they could be hauled off site. The two drums were hauled off for disposal on April 28, 2017, refer to TRS' Final report in Appendix B for waste profiles. While the drums were being stored on site, a combination lock was placed on the man door adjacent to the overhead garage door to keep the building on site secure. Once the drums were removed from the site, the lock on the building was removed.

## 8.2 Final Demobilization Completion Meeting

On April 6, 2017, a final demobilization completion meeting was held at the site between TRS, CDM Smith, Bodine, the Illinois EPA, and the U.S. EPA. The purpose of the meeting was to confirm that the site had been returned to its original condition. After the meeting was completed, it was determined that the site had been returned as close as possible to its previous condition. The one exception is that the interior loading ramp that was removed for electrode/probe installation was not replaced or restored because the building has been condemned and will almost certainly be demolished. In addition, two drums of spent carbon and the external process tank were onsite at the time, but were eventually removed on April 28, 2017. Refer to **Appendix E** for the demobilization memorandum that was submitted to the Illinois EPA on April 10, 2017. The memo includes punch list items inspected during the final demobilization completion meeting.

## Section 9

### Area 4 Contact Information

A summary of the key Area 4 ERH RA project personnel contacts is presented below.

Name	Title	Organization	Contact Information
Brian Conrath	Remedial Project Manager	Illinois Environmental Protection Agency	Bureau of Land 1021 North Grand Avenue East Springfield, Illinois 62794 217-557-8155 Brian.Conrath@illinois.gov
Karen Kirchner	Remedial Project Manager	U.S. Environmental Protection Agency	77 West Jackson Boulevard Mail Code: SR-6J Chicago, IL 60604 312-353-4669 Karen.kirchner@epa.gov
Chris Thomas	Senior Project Manager	TRS Group, Inc.	PO Box 737 Longview, Washington 98632 847-376-3691 cthomas@thermalrs.com
Brad Morris	Project Manager	TRS Group, Inc.	PO Box 737 Longview, Washington 98632 360-560-7551 bmorris@thermalrs.com
John Grabs	Senior Project Manager	CDM Smith, Inc.	125 South Wacker Drive Suite 700 Chicago, Illinois 312-346-5000 grabsc@cdmsmith.com
Troy McFate	Senior Project Manager	Bodine Environmental Services, Inc.	5350 East Firehouse Road Decatur, Illinois 62521 217-519-3955 tmcfate@bodineservices.com

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## Section 10

### References

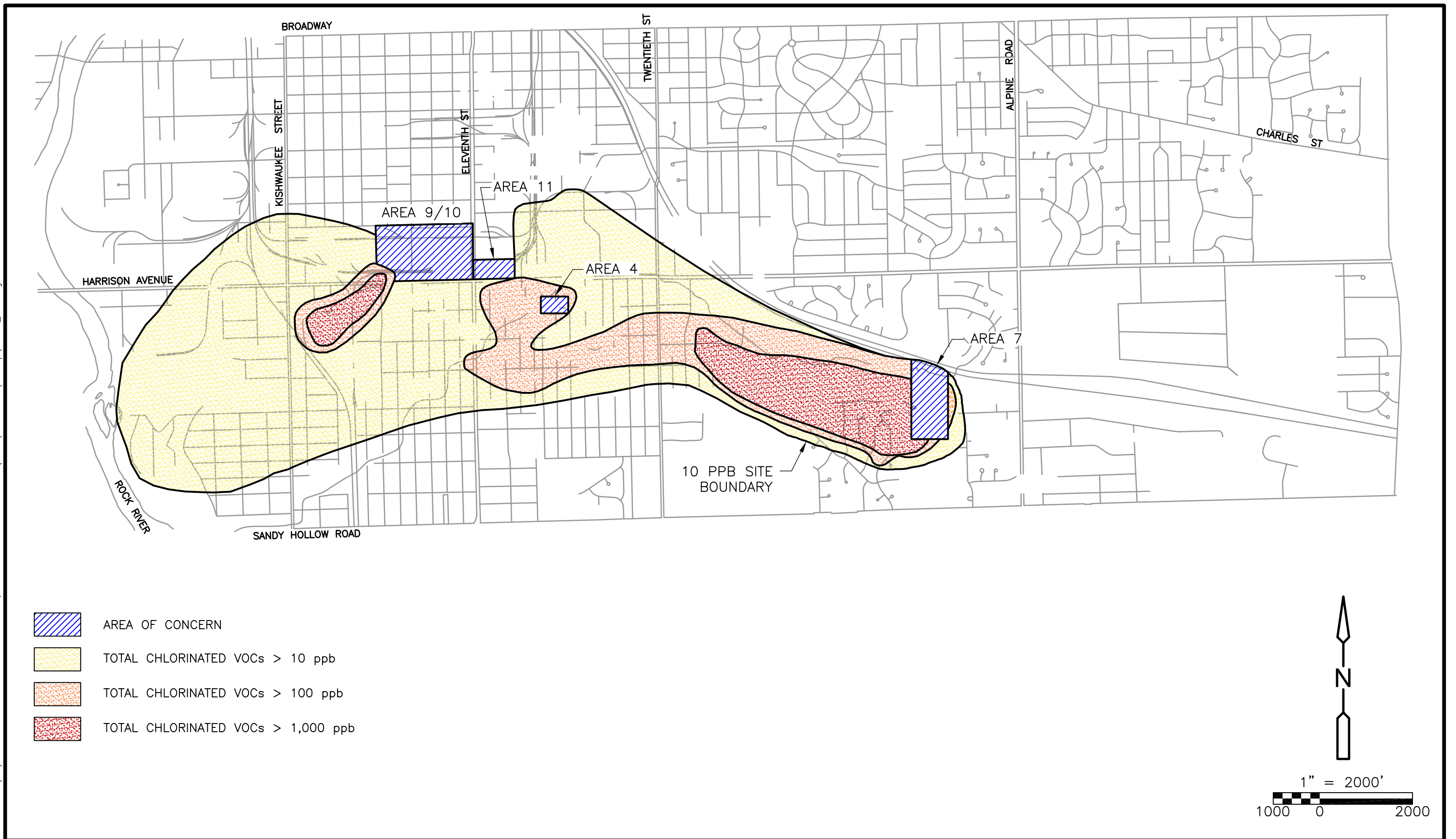
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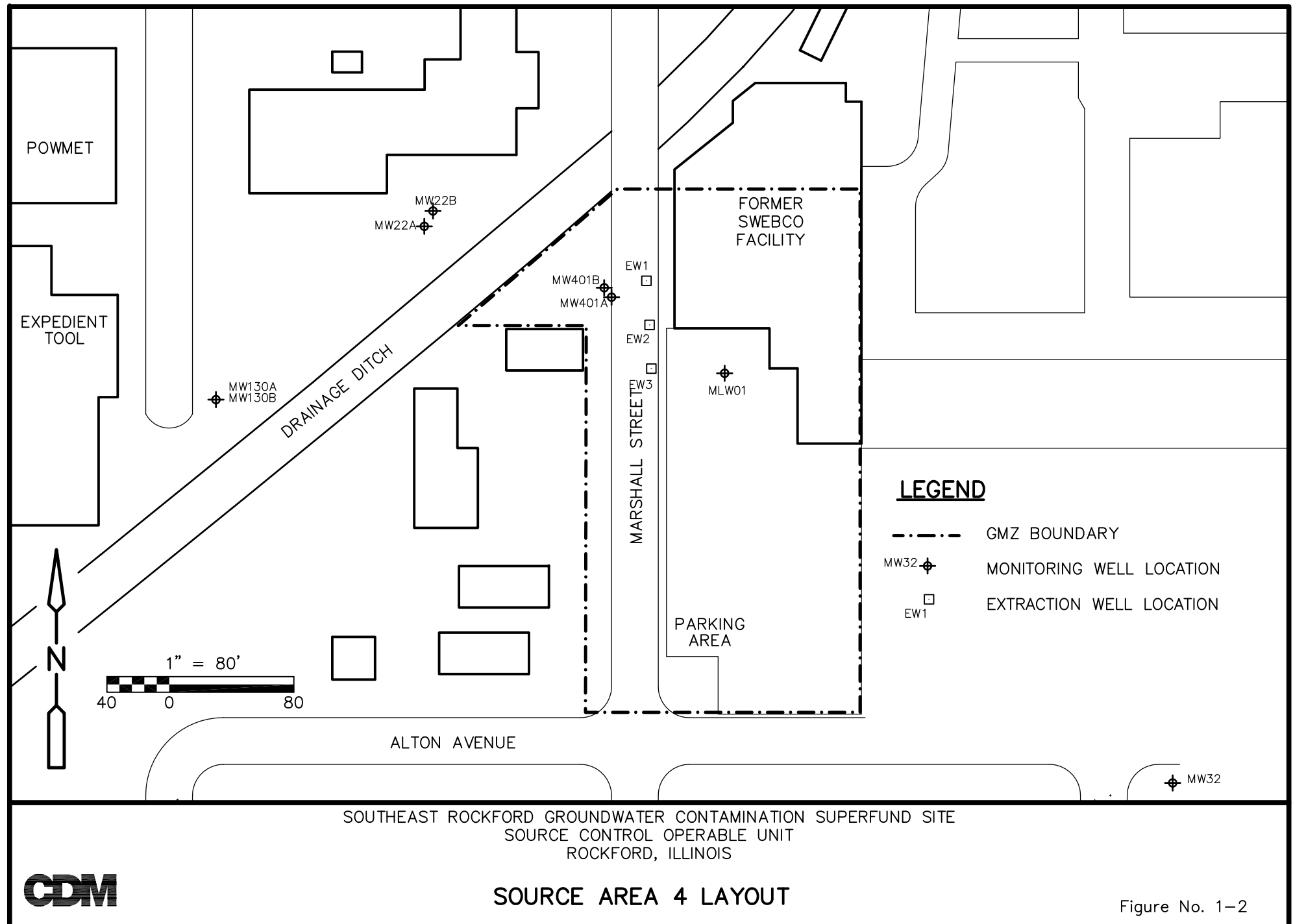


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# Figures

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# Tables

Table 7-1  
Round 1 Soil Confirmation Sampling Analytical Data  
Souce Area 4 Soil Component RA  
Southeast Rockford Groundwater Contamination Superfund Site

Analyte	Remediation Goal	STAT A4-GP01A-161215 12/15/2016		STAT A4-GP08A-161215 12/15/2016		STAT A4-GP08A-161215D 12/15/2016		STAT A4-GP09A-161215 12/15/2016		STAT A4-GP11A-161215 12/15/2016		STAT A4-GP118-161215 12/15/2016		STAT A4-GP12A-161215 12/15/2016		STAT A4-GP13A-161214 12/14/2016		STAT A4-GP13B-161214 12/14/2016		STAT A4-GP14A-161214 12/14/2016		STAT A4-GP14B-161214 12/14/2016	
		Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
1,1,1-Trichloroethane	9118	280	U	330		300	U	5.5	U	5.8	U	5.7	U	5.4	U	6	U	5.7	U	5.5	U	290	U
1,1,2,2-Tetrachloroethane		280	U	280	U	300	U	5.5	U	5.8	U	5.7	U	5.4	U	6	U	5.7	UJ	5.5	U	290	U
1,1,2-Trichloro-1,2,2-trifluoroethane		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,1,2-Trichloroethane	20	280	U	280	U	300	U	5.5	U	5.8	U	5.7	U	5.4	U	6	U	5.7	U	5.5	U	290	U
1,1-Dichloroethane		280	U	280	U	300	U	5.5	U	5.8	U	5.7	U	5.4	U	6	U	5.7	U	5.5	U	290	U
1,1-Dichloroethene	60	280	U	280	U	300	U	15		5.8	U	5.7	U	5.4	U	6	U	5.7	U	5.5	U	290	U
1,2,3-Trichlorobenzene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,2,4-trichlorobenzene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,2-Dibromo-3-chloropropane		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,2-Dibromoethane		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,2-Dichlorobenzene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,2-Dichloroethane		280	U	280	U	300	U	5.5	U	5.8	U	5.7	U	5.4	U	6	U	5.7	U	5.5	U	290	U
1,2-Dichloropropane		280	U	280	U	300	U	5.5	U	5.8	U	5.7	U	5.4	U	6	U	5.7	U	5.5	U	290	U
1,3-Dichlorobenzene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,4-Dichlorobenzene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
2-Butanone		4200	U	4200	U	4500	U	83	U	87	U	85	U	82	U	90	U	86	U	83	U	4400	U
2-Hexanone		1100	UJ	1100	UJ	1200	UJ	22	UJ	23	UJ	23	UJ	22	UJ	24	U	23	U	22	U	1200	U
4-Methyl-2-pentanone		1100	U	1100	U	1200	U	22	U	23	U	23	U	22	U	24	U	23	U	22	U	1200	U
Acetone		4200	U	4200	U	4500	U	83	U	87	U	85	U	82	U	90	UJ	86	UJ	83	UJ	4400	UJ
Benzene		110	U	110	U	120	U	5.5	U	5.8	U	5.7	U	5.4	U	6	U	5.7	U	0.55	U	120	U
Bromochloromethane		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Bromodichloromethane		280	U	280	U	300	U	5.5	U	5.8	U	5.7	U	5.4	U	6	U	5.7	U	0.55	U	290	U
Bromoform		280	U	280	U	300	U	5.5	U	5.8	U	5.7	U	5.4	UJ	6	U	5.7	U	0.55	U	290	U
Bromomethane		560	U	560	U	600	U	11	UJ	12	U	11	U	11	U	12	U	11	U	11	U	590	U
Carbon disulfide		2800	U	2800	U	3000	U	55	U	5.8	U	57	U	54	U	60	UJ	57	UJ	55	UJ	2900	UJ
Carbon tetrachloride	70	280	U	280	U	300	U	5.5	U	5.8	U	5.7	U	5.4	UJ	6	U	5.7	U	5.5	U	290	U
Chlorobenzene		280	U	280	U	300	U	5.5	U	5.8	U	5.7	U	5.4	UJ	6	U	5.7	U	5.5	U	290	U
Chloroethane		560	U	560	U	600	U	11	U	12	U	11	U	11	U	12	U	11	U	11	U	590	U
Chloroform		280	U	280	U	300	U	5.5	U	5.8	U	5.7	U	5.4	U	6	U	5.7	U	5.5	U	290	U
Chloromethane		560	U	560	U	600	U	11	U	12	U	11	U	11	U	12	U	11	U	11	U	590	U
cis-1,2-Dichloroethene		280	U	280	U	300	U	5.5	U	5.8	U	5.7	U	5.4	U	6	U	5.7	U	5.5	U	290	U
cis-1,3-Dichloropropene		110	U	110	U	120	U	2.2	U	2.3	U	2.3	U	2.2	U	24	U	2.3	U	2.2	U	120	U
Cyclohexane		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Dibromochloromethane		280	U	280	U	300	U	5.5	U	5.8	U	5.7	U	5.4	U	6	U	5.7	U	5.5	U	290	U
Dichlorodifluoromethane		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Ethylbenzene		280	U	280	U	300	U	94		5.8	U	5.7	U	5.4	UJ	6	U	5.7	U	5.5	U	290	U
Isopropylbenzene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
m,p-Xylene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Methyl Acetate		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Methyl tert-butyl ether		280	U	280	U	300	U	5.5	U	5.8	U	5.7	U	5.4	U	6	U	5.7	U	5.5	U	290	U
Methylcyclohexane		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Methylene chloride		560	UJ	560	UJ	600	UJ	11	UJ	12	UJ	11	UJ	11	UJ	12	UJ	11	UJ	11	UJ	590	UJ
o-xylene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Styrene		280	U	280	U	300	U	5.5	U	5.8	U	5.7	U	5.4	UJ	6	U	5.7	U	5.5	U	290	U
Tetrachloroethene	60	740		540		500		77		5.8	U	5.7	U	5.4	U	6	U	5.7	U	5.5	U	290	U
Toluene		280	U	280	U	300	U	12		5.8	U	5.7	U	5.4	UJ	6.3		5.7	U	5.5	U	290	U
trans-1,2-Dichloroethene		280	U	280	U	300	U	5.5	U	5.8	U	5.7	U	5.4	U	6	U	5.7	U	5.5	U	290	U
trans-1,3-Dichloropropene		110	U	110	U	120	U	2.2	U	2.3	U	2.3	U	2.2	U	24	U	2.3	U	2.2	U	120	U
Trichloroethene	60	280	U	280	U	300	U	25		5.8	U	5.7	U	5.4	U	6	U	5.7	U	5.5	U	290	U
Trichlorofluoromethane		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Vinyl chloride		280	U	280	U	300	U	5.5	U	5.8	U	5.7	U	5.4	U	6	U	5.7	U	5.5	U	290	U
Xylenes, Total		840	U	840	U	900	U	650		17	U	17	U	33	J	18	U	17	U	17	U	880	U

Notes:  
All results in micrograms per kilogram  
Shaded results exceed remediation goal  
U = Not detected at value shown  
J = Estimated result  
Q = Qualifier  
NA = Not Analyzed

Table 7-1

Round 1 Soil Confirmation Sampling Analytical Data

Souce Area 4 Soil Component RA

Southeast Rockford Groundwater Contamination Superfund Site

Remediation Analyte Goal		Test America SS1-37' 12/15/2016	Test America SS2-37'-SOL-20161214 12/14/2016	Test America SS3-32'-SOL-20161214 12/14/2016	Test America SS4-32' 12/16/2016	Test America SS5-32' 12/16/2016	Test America SS6-32' 12/16/2016	Test America SS7-32' 12/15/2016	Test America SS8-37' 12/15/2016	Test America SS9-32' 12/15/2016	Test America SS10-32' 12/16/2016	Test America SS11-8' 12/15/2016
		Result Q	Result Q	Result Q	Result Q	Result Q	Result Q	Result Q	Result Q	Result Q	Result Q	Result Q
1,1,1-Trichloroethane	9118	510 U	1.9 U	460 U	100 U	470 U	470 U	1.7 U	400 J	99 U	50 U	49 U
1,1,2,2-Tetrachloroethane		510 U	1.9 U	460 U	100 U	470 U	470 U	1.7 U	490 U	99 U	50 U	49 U
1,1,2-Trichloro-1,2,2-trifluoroethane		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	20	510 U	1.9 U	460 U	100 U	470 U	470 U	1.7 U	490 U	99 U	50 U	49 U
1,1-Dichloroethane		510 U	1.9 U	460 U	100 U	470 U	470 U	1.7 U	490 U	99 U	50 U	49 U
1,1-Dichloroethene	60	510 U	1.9 U	420 J	100 U	470 U	570	1.7 U	490 U	99 U	50 U	49 U
1,2,3-Trichlorobenzene		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-trichlorobenzene		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane		510 U	4.7 U	460 U	100 U	470 U	470 U	4.2 U	490 U	99 U	50 U	49 U
1,2-Dichloropropane		510 U	1.9 U	460 UJ	100 U	470 U	470 U	1.7 U	490 U	99 U	50 U	49 U
1,3-Dichlorobenzene		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone		2500 U	4.7 U	2300 U	520 U	2300 U	2400 U	4.7	2500 U	490 U	250 U	250 U
2-Hexanone		2500 U	4.7 U	2300 U	520 U	2300 U	2400 U	4.2 U	2500 U	490 U	250 U	250 U
4-Methyl-2-pentanone		2500 U	4.7 U	520 U	520 U	2300 U	2400 U	4.2 U	2500 U	490 U	250 U	250 U
Acetone		2500 U	19 U	2300 U	520 U	2300 U	2400 U	2.7	2500 U	490 U	250 U	580
Benzene		130 U	1.9 U	110 U	26 U	120 U	120 U	1.7 U	120 U	25 U	12 U	12 U
Bromochloromethane		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane		510 U	1.9 U	460 U	100 U	470 U	470 U	1.7 U	490 U	99 U	50 U	49 U
Bromoform		510 U	1.9 U	460 U	100 U	470 U	470 U	1.7 U	490 U	99 U	50 U	49 U
Bromomethane		1000 U	1.9 U	920 U	210 U	940 U	940 U	4.2 U	990 U	200 U	100 U	98 U
Carbon disulfide		1000 U	4.7 U	920 U	210 U	940 U	940 U	4.2 U	990 U	200 U	100 U	98 U
Carbon tetrachloride	70	510 U	1.9 U	460 U	100 U	470 U	470 U	1.7 U	490 U	99 U	50 U	49 U
Chlorobenzene		510 U	1.9 U	460 U	100 U	470 U	470 U	1.7 U	490 U	99 U	50 U	49 U
Chloroethane		510 UJ	4.7 U	460 U	100 U	470 U	470 U	4.2 U	490 U	99 U	50 U	49 U
Chloroform		510 U	1.9 U	460 U	100 U	470 U	470 U	1.7 U	490 U	99 U	50 U	49 U
Chloromethane		510 U	4.7 U	460 U	100 U	470 U	470 U	4.2 U	490 U	99 U	50 U	49 U
cis-1,2-Dichloroethene		510 U	1.9 U	460 U	100 U	470 U	470 U	1.7 U	490 U	99 U	50 U	49 U
cis-1,3-Dichloropropene		510 U	1.9 U	460 U	100 U	470 U	470 U	1.7 U	490 U	99 U	50 U	49 U
Cyclohexane		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane		510 U	1.9 U	460 U	100 U	470 U	470 U	1.7 U	490 U	99 U	50 U	49 U
Dichlorodifluoromethane		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene		130 U	1.9 U	230	26 U	120 U	680	1.7 U	120 U	140	12 U	12 U
Isopropylbenzene		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m,p-Xylene		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl Acetate		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride		2500 U	4.7 U	520 U	520 U	2300 U	2400 U	4.2 U	2500 U	490 U	250 U	250 U
o-xylene		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene		510 U	1.9 U	460 U	100 U	470 U	470 U	1.7 U	490 U	99 U	50 U	49 U
Tetrachloroethene	60	560	1.9 U	460 U	100 U	470 U	280 J	1.7 U	440 J	86 J	50 U	49 U
Toluene		130 U	4	110 U	26 U	120 U	140	3.1	120 U	25 U	12 U	12 U
trans-1,2-Dichloroethene		510 U	1.9 U	460 U	100 U	470 U	470 U	1.7 U	490 U	99 U	50 U	49 U
trans-1,3-Dichloropropene		510 U	1.9 U	460 U	100 U	470 U	470 U	1.7 U	490 U	99 U	50 U	49 U
Trichloroethene	60	250 U	1.9 U	23 U	52 U	230 U	240 U	1.7 U	250 U	49 U	25 U	25 U
Trichlorofluoromethane		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride		250 U	1.9 U	230 U	52 U	230 U	240 U	1.7 U	250 U	49 U	25 U	25 U
Xylenes, Total		250 U	3.8 U	1800	200	650	5100	3.4 U	250 U	1200	25 U	25 U

Notes:

All results in micrograms per kilogram

Shaded results exceed remediation goal

U = Not detected at value shown

J = Estimated result

Q = Qualifier

NA = Not Analyzed

Table 7-1  
Round 1 Soil Confirmation Sampling Analytical Data  
Souce Area 4 Soil Component RA  
Southeast Rockford Groundwater Contamination Superfund Site

Remediation AnalyteGoal		Test America SS11-16' 12/15/2016		Test America SS11-24' 12/15/2016		Test America SS11-32' 12/15/2016		Test America SS12-8' 12/15/2016		Test America SS12-16' 12/15/2016		Test America SS12-24' 12/15/2016		Test America SS12-32' 12/15/2016		Test America SS13-8'-SOL-20161214 12/14/2016		Test America SS13-16'-SOL-20161214 12/14/2016		Test America SS13-16'-SOL-20161214-Dup 12/14/2016		Test America SS13-24'-SOL-20161214 12/14/2016	
		Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
1,1,1-Trichloroethane	9118	50	U	51	U	460	U	48	U	47	U	51	U	98	U	94	U	49	U	47	U	49	U
1,1,2,2-Tetrachloroethane		50	U	51	U	460	U	48	U	47	U	51	U	98	U	94	U	49	U	47	U	49	U
1,1,2-Trichloro-1,2,2-trifluoroethane		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,1,2-Trichloroethane	20	50	U	51	U	460	U	48	U	47	U	51	U	98	U	94	U	49	U	47	U	49	U
1,1-Dichloroethane		50	U	51	U	460	U	48	U	47	U	51	U	98	U	94	U	49	U	47	U	49	U
1,1-Dichloroethene	60	50	U	51	U	460	U	48	U	47	U	51	U	98	U	94	U	49	U	47	U	49	U
1,2,3-Trichlorobenzene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,2,4-trichlorobenzene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,2-Dibromo-3-chloropropane		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,2-Dibromoethane		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,2-Dichlorobenzene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,2-Dichloroethane		50	U	51	U	460	U	48	U	47	U	51	U	98	U	94	U	49	U	47	U	49	U
1,2-Dichloropropane		50	U	51	U	460	U	48	U	47	U	51	U	98	U	94	U	49	U	47	U	49	U
1,3-Dichlorobenzene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,4-Dichlorobenzene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
2-Butanone		250	U	250	U	2300	U	240	U	230	U	260	U	490	U	470	U	250	U	230	U	240	U
2-Hexanone		250	U	250	U	2300	U	240	U	230	U	260	U	490	U	470	U	250	U	230	U	240	U
4-Methyl-2-pentanone		250	U	250	U	2300	U	240	U	230	U	260	U	490	U	471	U	250	U	230	U	240	U
Acetone		250	U	250	U	2300	U	240	U	230	U	260	U	490	U	680		250	U	230	U	240	U
Benzene		12	U	13	U	110	U	12	U	12	U	13	U	24	U	23	U	12	U	12	U	12	U
Bromochloromethane		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Bromodichloromethane		50	U	51	U	460	U	48	U	47	U	51	U	98	U	94	U	49	U	47	U	49	U
Bromoform		50	U	51	U	460	U	48	U	47	U	51	U	98	U	94	U	49	U	47	U	49	U
Bromomethane		99	U	100	U	920	U	96	U	94	U	100	U	200	U	190	U	98	U	94	U	97	U
Carbon disulfide		99	U	100	U	920	U	96	U	94	U	100	U	200	U	190	U	98	U	94	U	97	U
Carbon tetrachloride	70	50	U	51	U	460	U	48	U	47	U	51	U	98	U	94	U	49	U	47	U	49	U
Chlorobenzene		50	U	51	U	460	U	48	U	47	U	51	U	98	U	94	U	49	U	47	U	49	U
Chloroethane		50	U	51	U	460	U	48	U	47	U	51	U	98	U	94	U	49	U	47	U	49	U
Chloroform		50	U	51	U	460	U	48	U	47	U	51	U	98	U	94	U	49	U	47	U	49	U
Chloromethane		50	U	51	U	460	U	48	U	47	U	51	U	98	U	94	U	49	U	47	U	49	U
cis-1,2-Dichloroethene		50	U	51	U	460	U	48	U	47	U	51	U	98	U	94	U	49	U	47	U	49	U
cis-1,3-Dichloropropene		50	U	51	U	460	U	48	U	47	U	51	U	98	U	94	U	49	U	47	U	49	U
Cyclohexane		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Dibromochloromethane		50	U	51	U	460	U	48	U	47	U	51	U	98	U	94	U	49	U	47	U	49	U
Dichlorodifluoromethane		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Ethylbenzene		12	U	13	U	110	U	12	U	12	U	13	U	24	U	23	U	12	U	12	U	12	U
Isopropylbenzene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
m,p-Xylene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Methyl Acetate		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Methyl tert-butyl ether		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Methylcyclohexane		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Methylene chloride		250	U	250	U	2300	U	240	U	230	U	260	U	490	U	470	U	250	U	230	U	240	U
o-xylene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Styrene		50	U	51	U	460	U	48	U	47	U	51	U	98	U	94	U	49	U	47	U	49	U
Tetrachloroethene	60	50	U	51	U	460	U	48	U	47	U	51	U	98	U	94	U	49	U	47	U	49	U
Toluene		12	U	13	U	110	U	12	U	47	U	13	U	24	U	23	U	12	U	12	U	10	J
trans-1,2-Dichloroethene		50	U	51	U	460	U	48	U	47	U	51	U	98	U	94	U	49	U	47	U	49	U
trans-1,3-Dichloropropene		50	U	51	U	460	U	48	U	47	U	51	U	98	U	94	U	49	U	47	U	49	U
Trichloroethene	60	25	U	25	U	230	U	24	U	23	U	26	U	49	U	47	U	25	U	23	U	24	U
Trichlorofluoromethane		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Vinyl chloride		25	U	25	U	230	U	24	U	23	U	26	U	49	U	47	U	25	U	23	U	24	U
Xylenes, Total		25	U	25	U	230	U	24	U	23	U	26	U	49	U	47	U	25	U	23	U	24	U

Notes:  
All results in micrograms per kilogram  
Shaded results exceed remediation goal  
U = Not detected at value shown  
J = Estimated result  
Q = Qualifier  
NA = Not Analyzed



Table 7-1  
Round 1 Soil Confirmation Sampling Analytical Data  
Souce Area 4 Soil Component RA  
Southeast Rockford Groundwater Contamination Superfund Site

Analyte	Remediation Goal	Test America SS13-32'-SOL-20161214 12/14/2016		Test America SS14-8'-SOL-20161214 12/14/2016		Test America SS14-8'-SOL-20161214-Dup 12/14/2016		Test America SS14-16'-SOL-20161214 12/14/2016		Test America SS14-16'-SOL-20161214-Dup 12/14/2016		Test America SS14-24'-SOL-20161214 12/14/2016		Test America SS14-37'-SOL-20161214 12/14/2016		Test America SS15-8'-SOL-20161214 12/14/2016		Test America SS15-16'-SOL-20161214 12/14/2016		Test America SS15-24'-SOL-20161214 12/14/2016		Test America SS15-24'-SOL-20161214-Dup 12/14/2016	
		Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
1,1,1-Trichloroethane	9118	99	U	47	U	100	U	49	U	45	U	50	U	46	U	1.9	U	1.8	U	52	U	53	U
1,1,2,2-Tetrachloroethane		99	U	47	U	100	U	49	U	45	U	50	U	46	U	1.9	U	1.8	U	52	U	53	U
1,1,2-Trichloro-1,2,2-trifluoroethane		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,1,2-Trichloroethane	20	99	U	47	U	100	U	49	U	45	U	50	U	46	U	1.9	U	1.8	U	52	U	53	U
1,1-Dichloroethane		99	U	47	U	100	U	49	U	45	U	50	U	46	U	1.9	U	1.8	U	52	U	53	U
1,1-Dichloroethene	60	99	U	47	U	100	U	49	U	45	U	50	U	46	U	1.9	U	1.8	U	52	U	53	U
1,2,3-Trichlorobenzene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,2,4-trichlorobenzene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,2-Dibromo-3-chloropropane		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,2-Dibromoethane		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,2-Dichlorobenzene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,2-Dichloroethane		99	U	47	U	100	U	49	U	45	U	50	U	46	U	1.9	U	4.6	U	52	U	53	U
1,2-Dichloropropane		99	U	47	U	100	U	49	U	45	U	50	U	46	U	1.9	U	1.8	U	52	U	53	UJ
1,3-Dichlorobenzene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,4-Dichlorobenzene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
2-Butanone		490	U	240	U	510	U	240	U	220	U	250	U	230	U	4.7	U	4.6	U	260	U	270	U
2-Hexanone		490	U	240	U	510	U	240	U	220	U	250	U	230	U	4.7	U	4.6	U	260	U	270	U
4-Methyl-2-pentanone		490	U	240	U	510	U	240	U	220	U	250	U	230	U	4.7	U	4.6	U	260	U	270	U
Acetone		490	U	1000		1200		240	U	220	U	250	U	230	U	19	U	19	U	260	U	270	U
Benzene		30		12	U	26	U	12	U	11	U	12	U	12	U	2		2.1		13	U	13	U
Bromochloromethane		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Bromodichloromethane		99	U	47	U	100	U	49	U	45	U	50	U	46	U	1.9	U	1.8	U	52	U	53	U
Bromoform		99	U	47	U	100	U	49	U	45	U	50	U	46	U	1.9	U	1.8	U	52	U	53	U
Bromomethane		200	U	95	U	200	U	98	U	89	U	100	U	92	U	1.9	U	1.8	U	100	U	110	U
Carbon disulfide		200	U	95	U	200	U	98	U	89	U	100	U	92	U	4.7	U	4.6	U	100	U	110	U
Carbon tetrachloride	70	99	U	47	U	100	U	49	U	45	U	50	U	46	U	1.9	U	1.8	U	52	U	53	U
Chlorobenzene		99	U	47	U	100	U	49	U	45	U	50	U	46	U	1.9	U	1.8	U	52	U	53	U
Chloroethane		99	U	47	U	100	U	49	U	45	U	50	U	46	U	4.7	U	4.6	U	52	U	53	U
Chloroform		99	U	47	U	100	U	49	U	45	U	50	U	46	U	1.9	U	1.8	U	52	U	53	U
Chloromethane		99	U	47	U	100	U	49	U	45	U	50	U	46	U	1.9	U	4.6	U	52	U	53	U
cis-1,2-Dichloroethene		99	U	47	U	100	U	49	U	45	U	50	U	46	U	1.9	U	1.8	U	52	U	53	U
cis-1,3-Dichloropropene		99	U	47	U	100	U	49	U	45	U	50	U	46	U	1.9	U	1.8	U	52	U	53	U
Cyclohexane		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Dibromochloromethane		99	U	47	U	100	U	49	U	45	U	50	U	46	U	1.9	U	1.8	U	52	U	53	U
Dichlorodifluoromethane		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Ethylbenzene		29		12	U	26	U	12	U	11	U	12	U	12	U	1.9	U	1.8	U	13	U	13	U
Isopropylbenzene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
m,p-Xylene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Methyl Acetate		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Methyl tert-butyl ether		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Methylcyclohexane		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Methylene chloride		490	U	240	U	510	U	240	U	220	U	250	U	230	U	4.7	U	4.6	U	260	U	270	U
o-xylene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Styrene		99	U	47	U	100	U	49	U	45	U	50	U	46	U	1.9	U	1.8	U	52	U	53	U
Tetrachloroethene	60	99	U	47	U	100	U	49	U	45	U	50	U	46	U	1.9	U	1.8	U	52	U	53	U
Toluene		39		12	U	26	U	12	U	11	U	12	U	12	U	4.8		5.7		13	U	13	U
trans-1,2-Dichloroethene		99	U	47	U	100	U	49	U	45	U	50	U	46	U	1.9	U	1.8	U	52	U	53	U
trans-1,3-Dichloropropene		99	U	47	U	100	U	49	U	45	U	50	U	46	U	1.9	U	1.8	U	52	U	53	U
Trichloroethene	60	26	J	24	U	51	U	24	U	22	U	25	U	23	U	1.9	U	1.8	U	26	U	27	U
Trichlorofluoromethane		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Vinyl chloride		49	U	24	U	51	U	24	U	22	U	25	U	23	U	1.9	U	1.8	U	26	U	27	U
Xylenes, Total		110		24	U	51	U	24	U	22	U	25	U	23	U	3.8	U	3.8	U	26	U	27	U

Notes:  
All results in micrograms per kilogram  
Shaded results exceed remediation goal  
U = Not detected at value shown  
J = Estimated result  
Q = Qualifier  
NA = Not Analyzed

Table 7-1

Round 1 Soil Confirmation Sampling Analytical Data

Souce Area 4 Soil Component RA

Southeast Rockford Groundwater Contamination Superfund Site

Remediation Goal		Test America SS15-32'-SOL-20161214 12/14/2016		Test America SS15-32'-SOL-20161214-Dup 12/14/2016		Test America SS16-8'-SOL-20161213 12/13/2016		Test America SS16-16'-SOL-20161213 12/13/2016		Test America SS16-24'-SOL-20161213 12/13/2016		Test America SS16-32'-SOL-20161213 12/13/2016		Test America SS17-8'-SOL-20161213 12/13/2016		Test America SS17-16'-SOL-20161213 12/13/2016		Test America SS17-24'-SOL-20161213 12/13/2016		Test America SS17-32'-SOL-20161213 12/13/2016		Test America SS18-8'-SOL-20161213 12/13/2016	
		Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
1,1,1-Trichloroethane	9118	100	U	100	U	50	U	47	U	51	U	550	U	1.7	U	1.9	U	1.9	U	97	U	1.6	U
1,1,2,2-Tetrachloroethane		100	U	100	U	50	U	47	U	51	U	550	U	1.7	U	1.9	U	1.9	U	97	U	1.6	U
1,1,2-Trichloro-1,2,2-trifluoroethane		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,1,2-Trichloroethane	20	100	U	100	U	50	U	47	U	51	U	550	U	1.7	U	1.9	U	1.9	U	97	U	1.6	U
1,1-Dichloroethane		100	U	100	U	50	U	47	U	51	U	550	U	1.7	U	1.9	U	1.9	U	97	U	1.6	U
1,1-Dichloroethene	60	100	U	100	U	50	U	47	U	51	U	550	U	1.7	U	1.9	U	1.9	U	97	U	1.6	U
1,2,3-Trichlorobenzene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,2,4-trichlorobenzene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,2-Dibromo-3-chloropropane		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,2-Dibromoethane		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,2-Dichlorobenzene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,2-Dichloroethane		100	U	100	U	50	U	47	U	51	U	550	U	4.2	U	4.8	U	4.8	U	97	U	4.1	U
1,2-Dichloropropane		100	U	100	UJ	50	UJ	47	UJ	51	UJ	550	UJ	1.7	U	1.9	U	1.9	U	97	UJ	1.6	U
1,3-Dichlorobenzene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,4-Dichlorobenzene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
2-Butanone		520	U	500	U	250	U	240	U	250	U	250	U	410		12		12		480	U	120	
2-Hexanone		520	U	500	U	250	U	240	U	250	U	2800	U	5.9		4.8	U	4.8	U	480	U	4.1	U
4-Methyl-2-pentanone		520	U	500	U	250	U	240	U	250	U	2800	U	4.2	U	4.8	U	4.8	U	480	U	4.1	U
Acetone		520	U	500	U	1500		860		260		2800	U	3100		140		53		480	U	1300	
Benzene		26	U	25	U	13	U	12	U	13	U	140	U	1.7	U	1.9	U	1.9	U	24	U	1.6	U
Bromochloromethane		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Bromodichloromethane		100	U	100	U	50	U	47	U	51	U	550	U	1.7	U	1.9	U	1.9	U	97	U	1.6	U
Bromoform		100	U	100	U	50	U	47	U	51	U	550	U	1.7	U	1.9	U	1.9	U	97	U	1.6	U
Bromomethane		210	U	200	U	100	U	95	U	100	U	1100	U	4.2	U	1.9	U	1.9	U	190	U	1.6	U
Carbon disulfide		210	UJ	200	U	100	U	95	U	100	U	1100	U	4.2	U	4.8	U	4.8	U	190	U	4.1	U
Carbon tetrachloride	70	100	U	100	U	50	U	47	U	51	U	550	U	1.7	U	1.9	U	1.9	U	97	U	1.6	U
Chlorobenzene		100	U	100	U	50	U	47	U	51	U	550	U	1.7	U	1.9	U	1.9	U	97	U	1.6	U
Chloroethane		100	U	100	U	50	U	47	U	51	U	550	U	4.2	U	4.8	U	4.8	U	97	U	4.1	U
Chloroform		100	U	100	U	50	U	47	U	51	U	550	U	1.7	U	1.9	U	1.9	U	97	U	1.6	U
Chloromethane		100	U	100	U	50	U	47	U	51	U	550	U	4.2	U	4.8	U	4.8	U	97	U	4.1	U
cis-1,2-Dichloroethene		100	U	100	U	50	U	47	U	51	U	550	U	1.7	U	1.9	U	1.9	U	97	U	1.6	U
cis-1,3-Dichloropropene		100	U	100	U	50	U	47	U	51	U	550	U	1.7	U	1.9	U	1.9	U	97	U	1.6	U
Cyclohexane		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Dibromochloromethane		100	U	100	U	50	U	47	U	51	U	550	U	1.7	U	1.9	U	1.9	U	97	U	1.6	U
Dichlorodifluoromethane		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Ethylbenzene		26	U	25	U	13	U	12	U	13	U	140	U	1.7	U	1.9	U	1.9	U	24	U	1.6	U
Isopropylbenzene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
m,p-Xylene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Methyl Acetate		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Methyl tert-butyl ether		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Methylcyclohexane		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Methylene chloride		520	U	500	U	250	U	240	U	250	U	2800	U	4.2	U	4.8	U	4.8	U	480	U	4.1	U
o-xylene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Styrene		100	U	100	U	50	U	47	U	51	U	550	U	1.7	U	1.9	U	1.9	U	97	U	1.6	U
Tetrachloroethene	60	67	J	110		50	U	47	U	51	U	550	U	1.7	U	1.9	U	1.9	U	130		1.6	U
Toluene		26	U	25	U	13	U	18	U	13	U	140	U	1.7	U	1.9	U	1.9	U	24	U	1.6	U
trans-1,2-Dichloroethene		100	U	100	U	50	U	47	U	51	U	550	U	1.7	U	1.9	U	1.9	U	97	U	1.6	U
trans-1,3-Dichloropropene		100	U	100	U	50	U	47	U	51	U	550	U	1.7	U	1.9	U	1.9	U	97	U	1.6	U
Trichloroethene	60	52	U	50	U	25	U	24	U	25	U	280	U	1.7	U	1.9	U	1.9	U	48	U	1.6	U
Trichlorofluoromethane		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Vinyl chloride		52	U	50	U	25	U	24	U	25	U	280	U	1.7	U	1.9	U	1.9	U	48	U	1.6	U
Xylenes, Total		52	U	50	U	25	U	24	U	25	U	280	U	3.4	U	3.8	U	3.8	U	48	U	3.3	U

Notes:

All results in micrograms per kilogram

Shaded results exceed remediation goal

U = Not detected at value shown

J = Estimated result

Q = Qualifier

NA = Not Analyzed

Table 7-1  
Round 1 Soil Confirmation Sampling Analytical Data  
Souce Area 4 Soil Component RA  
Southeast Rockford Groundwater Contamination Superfund Site

Remediation		Test America		Test America		Test America		CLP		CLP		CLP		CLP		CLP		CLP		CLP		CLP		CLP		CLP			
		SS18-16'-SOL-20161213 12/13/2016	SS18-24'-SOL-20161213 12/13/2016	SS18-32'-SOL-20161213 12/13/2016	A4-GP02A-161214 12/14/2016	A4-GP03A-161214 12/14/2016	A4-GP11A-161215 12/15/2016	A4-GP11A-161215-D 12/15/2016	A4-GP11B-161215 12/15/2016	A4-GP13A-161214 12/14/2016	A4-GP13B-161214 12/14/2016	A4-GP14A-161214 12/14/2016	A4-GP15A-161214 12/14/2016	A4-GP15B-161214 12/14/2016	A4-GP18A-161213 12/13/2016 15:50:00														
Analyte	Goal	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q		
1,1,1-Trichloroethane	9118	1.6	U	1.6	U	53	U	5.4	UJ	310	U	6.0	U	6.1	U	5.1	U	6.7	U	5.5	U	5.6	U	5.5	UJ	5.3	U	5.5	U
1,1,2,2-Tetrachloroethane		1.6	U	1.6	U	53	U	5.4	U	310	U	6.0	U	6.1	U	5.1	R	6.7	U	5.5	U	5.6	U	5.5	U	5.3	R	5.5	U
1,1,2-Trichloro-1,2,2-trifluoroethane		NA		NA		NA		5.4	UJ	310	U	6.0	U	6.1	U	5.1	U	6.7	U	5.5	U	5.6	U	5.5	UJ	5.3	U	5.5	U
1,1,2-Trichloroethane	20	1.6	U	1.6	U	53	U	5.4	U	310	U	6.0	U	6.1	U	5.1	U	6.7	U	5.5	U	5.6	U	5.5	U	5.3	U	5.5	U
1,1-Dichloroethane		1.6	U	1.6	U	53	U	5.4	U	310	U	6.0	U	6.1	U	5.1	U	6.7	U	5.5	U	5.6	U	5.5	U	5.3	U	5.5	U
1,1-Dichloroethene	60	1.6	U	1.6	U	53	U	5.4	UJ	310	U	6.0	U	6.1	U	5.1	UJ	6.7	U	14		5.6	U	5.5	U	5.3	U	5.5	U
1,2,3-Trichlorobenzene		NA		NA		NA		5.4	UJ	310	U	6.0	U	6.1	U	5.1	UJ	6.7	UJ	5.5	UJ	5.6	UJ	5.5	UJ	5.3	UJ	5.5	U
1,2,4-trichlorobenzene		NA		NA		NA		5.4	UJ	310	U	6.0	U	6.1	U	5.1	UJ	6.7	UJ	5.5	UJ	5.6	UJ	5.5	UJ	5.3	UJ	5.5	U
1,2-Dibromo-3-chloropropane		NA		NA		NA		5.4	U	310	U	6.0	U	6.1	U	5.1	R	6.7	UJ	5.5	U	5.6	UJ	5.5	U	5.3	R	5.5	U
1,2-Dibromoethane		NA		NA		NA		5.4	UJ	310	U	6.0	U	6.1	U	5.1	U	6.7	U	5.5	U	5.6	U	5.5	UJ	5.3	U	5.5	U
1,2-Dichlorobenzene		NA		NA		NA		5.4	UJ	310	U	6.0	U	6.1	U	5.1	UJ	6.7	UJ	5.5	UJ	5.6	UJ	5.5	UJ	5.3	UJ	5.5	U
1,2-Dichloroethane		4.1	U	4.1	U	53	U	5.4	UJ	310	U	6.0	U	6.1	U	5.1	U	6.7	U	5.5	U	5.6	U	5.5	UJ	5.3	U	5.5	U
1,2-Dichloropropane		1.6	U	1.6	U	53	U	5.4	U	310	U	6.0	U	6.1	U	5.1	U	6.7	U	5.5	U	5.6	U	5.5	U	5.3	U	5.5	U
1,3-Dichlorobenzene		NA		NA		NA		5.4	UJ	310	U	6.0	U	6.1	U	5.1	UJ	6.7	UJ	5.5	UJ	5.6	UJ	5.5	UJ	5.3	UJ	5.5	U
1,4-Dichlorobenzene		NA		NA		NA		5.4	UJ	310	U	6.0	U	6.1	U	5.1	UJ	6.7	UJ	5.5	UJ	5.6	UJ	5.5	UJ	5.3	UJ	5.5	U
2-Butanone		16		32		260	U	11	U	620	U	8.0	J	5.3	J	6.4	J	7.1	J	11	U	5.1	J	11	U	3.6	J	26	
2-Hexanone		4.1	U	4.1	U	260	U	11	U	620	U	12	U	12	U	10	U	13	U	11	U	11	U	11	U	11	U	11	U
4-Methyl-2-pentanone		4.1	U	4.1	U	260	U	11	U	620	U	12	U	12	U	10	U	13	U	11	U	11	U	11	U	11	U	11	U
Acetone		620		140		260	U	11	U	620	U	24		19		12		22		9.1	J	15		11	U	7.7	J	80	
Benzene		1.6	U	1.6	U	13	U	5.4	U	310	U	6.0	U	6.1	U	5.1	U	6.7	U	5.5	U	5.6	U	5.5	U	5.3	U	5.5	U
Bromochloromethane		NA		NA		NA		5.4	U	310	U	6.0	U	6.1	U	5.1	U	6.7	U	5.5	U	5.6	U	5.5	U	5.3	U	5.5	U
Bromodichloromethane		1.6	U	1.6	U	53	U	5.4	U	310	U	6.0	U	6.1	U	5.1	U	6.7	U	5.5	U	5.6	U	5.5	U	5.3	U	5.5	U
Bromoform		1.6	U	1.6	U	53	U	5.4	U	310	U	6.0	U	6.1	U	5.1	U	6.7	UJ	5.5	U	5.6	UJ	5.5	U	5.3	U	5.5	U
Bromomethane		1.6	U	1.6	U	110	U	5.4	U	310	U	6.0	U	6.1	U	5.1	U	6.7	U	5.5	U	5.6	U	5.5	U	5.3	U	5.5	U
Carbon disulfide		4.1	U	4.1	U	110	U	5.4	U	310	U	6.0	U	6.1	U	5.1	U	6.7	U	5.5	U	5.6	U	5.5	U	5.3	U	5.5	U
Carbon tetrachloride	70	1.6	U	1.6	U	53	U	5.4	UJ	310	U	6.0	U	6.1	U	5.1	U	6.7	U	5.5	U	5.6	U	5.5	UJ	5.3	U	5.5	U
Chlorobenzene		1.6	U	1.6	U	53	U	5.4	UJ	310	U	6.0	U	6.1	U	5.1	UJ	6.7	U	5.5	UJ	5.6	U	5.5	UJ	5.3	UJ	5.5	U
Chloroethane		4.1	U	4.1	U	53	U	5.4	U	310	U	6.0	U	6.1	U	5.1	U	6.7	U	5.5	U	5.6	U	5.5	U	5.3	U	5.5	U
Chloroform		1.6	U	1.6	U	53	U	5.4	U	310	U	6.0	U	6.1	U	5.1	U	6.7	U	5.5	U	5.6	U	5.5	U	5.3	U	5.5	U
Chloromethane		4.1	U	4.1	U	53	U	5.4	U	310	U	6.0	U	6.1	U	5.1	U	6.7	U	5.5	U	5.6	U	5.5	U	5.3	U	5.5	U
cis-1,2-Dichloroethene		1.6	U	1.6	U	53	U	5.4	UJ	310	U	6.0	U	6.1	U	5.1	UJ	6.7	U	5.5	U	5.6	U	5.5	U	5.3	U	5.5	U
cis-1,3-Dichloropropene		1.6	U	1.6	U	53	U	5.4	U	310	U	6.0	U	6.1	U	5.1	U	6.7	U	5.5	U	5.6	U	5.5	U	5.3	U	5.5	U
Cyclohexane		NA		NA		NA		5.4	U	310	U	6.0	U	6.1	U	5.1	U	6.7	U	5.5	U	5.6	U	5.5	U	5.3	U	5.5	U
Dibromochloromethane		1.6	U	1.6	U	53	U	5.4	U	310	U	6.0	U	6.1	U	5.1	U	6.7	U	5.5	U	5.6	U	5.5	U	5.3	U	5.5	U
Dichlorodifluoromethane		NA		NA		NA		5.4	U	310	U	6.0	U	6.1	U	5.1	U	6.7	U	5.5	U	5.6	U	5.5	U	5.3	U	5.5	U
Ethylbenzene		1.6	U	1.6	U	13	U	5.4	U	380		6.0	U	6.1	U	2.8	J	6.7	U	5.5	U	5.6	U	5.5	U	5.3	U	5.5	U
Isopropylbenzene		NA		NA		NA		5.4	U	140	J	6.0	U	6.1	U	8.9		6.7	U	5.5	U	5.6	U	5.5	U	5.3	U	5.5	U
m,p-Xylene		NA		NA		NA		5.4	U	1700		1.9	J	1.3	J	16		6.7	U	5.5	U	5.6	U	5.5	U	5.3	U	5.5	U
Methyl Acetate		NA		NA		NA		5.4	UJ	310	U	6.0	U	6.1	U	5.1	U	6.7	U	5.5	U	5.6	U	5.5	UJ	5.3	U	5.5	U
Methyl tert-butyl ether		NA		NA		NA		5.4	UJ	310	U	6.0	U	6.1	U	5.1	U	6.7	U	5.5	U	5.6	U	5.5	UJ	5.3	U	5.5	U
Methylcyclohexane		NA		NA		NA		5.4	U	310	U	6.0	U	6.1	U	5.1	U	6.7	U	94	J+	5.6	U	5.5	U	5.3		5.5	U
Methylene chloride		4.1	U	4.1	U	260	U	5.4	UJ	310	U	6.0	U	6.1	U	5.1	U	6.7	U	5.5	U								

Notes:  
All results in micrograms per kilogram  
Shaded results exceed remediation goal  
U = Not detected at value shown  
J = Estimated result  
Q = Qualifier  
NA = Not Analyzed

Table 7-2  
Round 2 Soil Confirmation Sampling Analytical Data  
Souce Area 4 Soil Component RA  
Southeast Rockford Groundwater Contamination Superfund Site

Analyte		Remediation Goal		STAT A4-GP01A-170117 01/17/2017		STAT A4-GP03A-170116 01/16/2017		STAT A4-GP06A-170117 01/17/2017		STAT A4-GP08A-170117 1/17/2017		STAT A4-GP09A-170116 1/16/2017		STAT A4-GP15L-170116 1/16/2017		STAT A4-GP15L-170116D 1/16/2017		Test America SS1-37'-SOL-20170117 01/17/2017		Test America SS3-32'-SOL-20170116 01/16/2017		Test America SS8-37'-SOL-20170117 1/17/2017		Test America SS9-32'-SOL-20170116 01/16/2017		Test America SS15-32'-SOL-2017 1/16/2017		Test America SS17-32'-SOL-20170116 1/16/2017		Test America SS17-32'-SOL-20170116-DUP 1/16/2017	
				Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
1,1,1-Trichloroethane		9118		260	U	250	U	260	U	280	U	5.2	U	5.2	U	4.9	U	97	U	95	U	91	U	88	U	52	U	46	U	46	U
1,1,2,2-Tetrachloroethane				260	U	250	U	260	U	280	U	5.2	UJ	5.2	U	4.9	U	97	U	95	U	91	U	88	U	52	U	46	U	46	U
1,1,2-Trichloro-1,2,2-trifluoroethane				NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,1,2-Trichloroethane		20		260	U	250	U	260	U	280	U	5.2	U	5.2	U	4.9	U	97	U	95	U	91	U	88	U	52	U	46	U	46	U
1,1-Dichloroethane				260	U	250	U	260	U	280	U	5.2	U	5.2	U	4.9	U	97	U	95	U	91	U	88	U	52	U	46	U	46	U
1,1-Dichloroethene		60		260	U	250	U	260	U	280	U	5.2	U	5.2	U	4.9	U	97	U	95	U	91	U	88	U	52	U	46	U	46	U
1,2,3-Trichlorobenzene				NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,2,4-trichlorobenzene				NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,2-Dibromo-3-chloropropane				NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,2-Dibromoethane				NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,2-Dichlorobenzene				NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,2-Dichloroethane				260	U	250	U	260	U	280	U	5.2	U	5.2	U	4.9	U	97	U	95	U	91	U	88	U	52	U	46	U	46	U
1,2-Dichloropropane				260	U	250	U	260	U	280	U	5.2	U	5.2	U	4.9	U	97	U	95	U	91	U	88	U	52	U	46	U	46	U
1,3-Dichlorobenzene				NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,4-Dichlorobenzene				NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
2-Butanone				4000	UJ	3800	U	4000	UJ	4100	UJ	77	U	79	U	75	U	490	U	470	U	460	U	440	U	260	U	230	U	230	U
2-Hexanone				1100	U	1000	U	1100	U	1100	U	21	U	21	U	20	U	490	U	470	U	460	U	440	U	260	U	230	U	230	U
4-Methyl-2-pentanone				1100	U	1000	U	1100	U	1100	U	21	U	21	U	20	U	490	U	470	U	460	U	440	U	260	U	230	U	230	U
Acetone				4000	UJ	3800	U	4000	UJ	4100	UJ	77	U	79	U	75	U	490	U	470	U	460	U	440	U	260	U	230	U	230	U
Benzene				260	U	250	U	260	U	280	U	5.2	UJ	5.2	U	4.9	U	24	U	24	U	23	U	22	U	13	U	12	U	11	U
Bromochloromethane				NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Bromodichloromethane				260	U	250	U	260	U	280	U	5.2	U	5.2	U	4.9	U	97	U	95	U	91	U	88	U	52	U	46	U	46	U
Bromoform				260	U	250	U	260	U	280	U	5.2	U	5.2	U	4.9	U	97	U	95	U	91	U	88	U	52	U	46	U	46	U
Bromomethane				520	U	510	U	540	U	550	UJ	10	U	10	U	10	U	190	U	190	U	180	U	180	U	100	U	93	U	92	U
Carbon disulfide				2600	U	2800	U	11		2800	U	0.45	J	0.58	J	0.53	J	190	U	190	U	180	U	180	U	100	U	93	U	92	U
Carbon tetrachloride		70		260	U	250	U	260	U	280	U	5.2	U	5.2	U	4.9	U	97	U	95	U	91	U	88	U	52	U	46	U	46	U
Chlorobenzene				260	U	250	U	260	U	280	U	5.2	UJ	5.2	U	4.9	U	97	U	95	U	91	U	88	U	52	U	46	U	46	U
Chloroethane				520	U	510	U	540	U	550	UJ	10	U	10	U	10	U	97	UJ	95	UJ	91	UJ	88	UJ	52	UJ	46	UJ	46	UJ
Chloroform				260	U	250	U	260	U	280	U	5.2	U	5.2	U	4.9	U	190	U	190	U	180	U	180	U	100	U	93	U	92	U
Chloromethane				520	U	510	U	540	U	550	U	10	U	10	U	10	U	97	U	95	U	91	U	88	U	52	U	46	U	46	U
cis-1,2-Dichloroethene				260	U	250	U	260	U	280	U	5.2	U	5.2	U	4.9	U	97	U	95	U	91	U	88	U	52	U	46	U	46	U
cis-1,3-Dichloropropene				110	U	100	U	110	U	110	U	2.1	U	2.1	U	2	U	97	U	95	U	91	U	88	U	52	U	46	U	46	U
Cyclohexane				NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Dibromochloromethane				260	U	250	U	260	U	280	U	5.2	U	5.2	U	4.9	U	97	U	95	U	91	U	88	U	52	U	46	U	46	U
Dichlorodifluoromethane				NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Ethylbenzene				260	U	250	U	380		280	U	16	J-	5.2	U	4.9	U	97	U	24	U	23	U	76	J+	13	U	12	U	11	U
Isopropylbenzene				NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
m,p-Xylene				NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Methyl Acetate				NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Methyl tert-butyl ether				260	U	250	U	260	U	280	U	5.2	U	5.2	U	4.9	U	NA		NA		NA		NA		NA		NA		NA	
Methylcyclohexane				NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Methylene chloride				520	U	510	U	540	U	550	U	15	U	16	U	15	U	490	U	470	U	460	U	440	U	260	U	230	U	230	U
o-xylene				NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Styrene				260	U	250	U	260	U	280	U	5.2	U	5.2	U	4.9	U	97	U	95	U	91	U	88	U	52	U	46	U	46	U
Tetrachloroethene		60		740		250	U	210		280	U	11		5.2	U	4.9	U	1700		95	U	91	U	77	J	52	U	46	U	46	U
Toluene				260	U	250	U	29		280	U	1.3	J-	1.8	J	4.9	U	24	U	24	U	23	U	22	U	14		12	U	11	U
trans-1,2-Dichloroethene				260	U	250	U	260	U	280	U	5.2	U	5.2	U	4.9	U	97	U	95	U	91	U	88	U	52	U	46	U	46	U
trans-1,3-Dichloropropene				110	U	100	U	110	U	110	U	2.1	U	2.1	U	2	U	97	U	95	U	91	U	88	U	52	U	46	U	46	U
Trichloroethene		60		260	U	250	U	120		23		5.2	U	5.2	U	4.9	U	49	U	47	U	46	U	44	U	26	U	23	U	23	U
Trichlorofluoromethane				NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Vinyl chloride				260	U	250	U	260	U	280	U	5.2	U	5.2	U	4.9	U	49	U	47	U	46	U	44	U	26	U	23	U	23	U
Xylenes, Total				28		760	U	2600		830	U	120	J-	0.91	J	15	U	49	U	47	U	46	U	770	J+	26	U	23	U	23	U

Notes:  
All results in micrograms per kilogram  
Shaded results exceed remediation goal  
U = Not detected at value shown  
J = Estimated result  
Q = Qualifier  
NA = Not Analyzed

Table 7-2  
Round 2 Soil Confirmation Sampling Analytical Data  
Souce Area 4 Soil Component RA  
Southeast Rockford Groundwater Contamination Superfund Site

Remediation		Test America SS6-32'-SOL-20170117 1/17/2017		Test America Trip Blank (ug/L) 01/16/2017		CLP A4-GP01A-170117 1/17/2017		CLP A4-GP03A-170116 1/16/2017		CLP A4-GP06A-170117 1/17/2017		CLP A4-GP06A-170117-D 1/17/2017		CLP A4-GP08A-170117 1/17/2017		CLP A4-GP09A-170116 1/16/2017		CLP A4-GP15C-170116 1/16/2017		CLP A4-GP17A-170116 1/16/2017	
		Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	q	Result	Q
1,1,1-Trichloroethane	9118	96	U	1	U	320	U	320	U	290	U	300	U	320	U	280	U	5.2	U	5.4	U
1,1,2,2-Tetrachloroethane		96	U	1	U	320	U	320	U	290	U	300	U	320	U	280	U	5.2	U	5.4	U
1,1,2-Trichloro-1,2,2-trifluoroethane		NA		NA		320	U	320	U	290	U	300	U	320	U	280	U	5.2	U	5.4	U
1,1,2-Trichloroethane	20	9	U	1	U	320	U	320	U	290	U	300	U	320	U	280	U	5.2	U	5.4	U
1,1-Dichloroethane		96	U	1	U	320	U	320	U	290	U	300	U	320	U	280	U	5.2	U	5.4	U
1,1-Dichloroethene	60	96	U	1	U	320	U	320	U	290	U	300	U	320	U	280	U	5.2	U	5.4	U
1,2,3-Trichlorobenzene		NA		NA		320	U	320	U	290	U	300	U	320	U	280	U	5.2	UJ	5.4	U
1,2,4-trichlorobenzene		NA		NA		320	U	320	U	290	U	300	U	320	U	280	U	5.2	UJ	5.4	U
1,2-Dibromo-3-chloropropane		NA		NA		320	U	320	U	290	U	300	U	320	U	280	U	5.2	U	5.4	U
1,2-Dibromoethane		NA		NA		320	U	320	U	290	U	300	U	320	U	280	U	5.2	U	5.4	U
1,2-Dichlorobenzene		NA		NA		320	U	320	U	290	U	300	U	320	U	280	U	5.2	UJ	5.4	U
1,2-Dichloroethane		96	U	1	U	320	U	320	U	290	U	300	U	320	U	280	U	5.2	U	5.4	U
1,2-Dichloropropane		96	U	1	U	320	U	320	U	290	U	300	U	320	U	280	U	5.2	U	5.4	U
1,3-Dichlorobenzene		NA		NA		320	U	320	U	290	U	300	U	320	U	280	U	5.2	UJ	5.4	U
1,4-Dichlorobenzene		NA		NA		320	U	320	U	290	U	300	U	320	U	280	U	5.2	UJ	5.4	U
2-Butanone		480	U	5	U	650	U	640	U	590	U	600	U	650	U	550	U	10	U	11	U
2-Hexanone		480	U	5	U	650	U	640	U	590	U	600	U	650	U	550	U	10	U	11	U
4-Methyl-2-pentanone		480	U	5	U	650	U	640	U	590	U	600	U	650	U	550	U	10	U	11	U
Acetone		480	U	6.1		650	U	640	U	590	U	600	U	650	U	550	U	7.2	J	8.1	J
Benzene		24	U	0.5	U	320	U	320	U	290	U	300	U	320	U	280	U	5.2	U	5.4	U
Bromochloromethane		NA		NA		320	U	320	U	290	U	300	U	320	U	280	U	5.2	U	5.4	U
Bromodichloromethane		96	U	1	U	320	U	320	U	290	U	300	U	320	U	280	U	5.2	U	5.4	U
Bromoform		96	U	1	U	320	U	320	U	290	U	300	U	320	U	280	U	5.2	U	5.4	U
Bromomethane		190	U	2	U	320	U	320	U	290	U	300	U	320	U	280	U	5.2	U	5.4	U
Carbon disulfide		190	U	2	U	320	U	320	U	290	U	300	U	320	U	280	U	5.2	U	5.4	U
Carbon tetrachloride	70	96	U	1	U	320	U	320	U	290	U	300	U	320	U	280	U	5.2	U	5.4	U
Chlorobenzene		96	U	1	U	320	U	320	U	290	U	300	U	320	U	280	U	5.2	UJ	5.4	U
Chloroethane		96	UJ	1	U	320	U	320	U	290	U	300	U	320	U	280	U	5.2	U	5.4	U
Chloroform		190	U	2	U	320	U	320	U	290	U	300	U	320	U	280	U	5.2	U	5.4	U
Chloromethane		96	U	1	U	320	U	320	U	290	U	300	U	320	U	280	U	5.2	U	5.4	U
cis-1,2-Dichloroethene		96	U	1	U	320	U	320	U	290	U	300	U	320	U	280	U	5.2	U	5.4	U
cis-1,3-Dichloropropene		96	U	1	U	320	U	320	U	290	U	300	U	320	U	280	U	5.2	U	5.4	U
Cyclohexane		NA		NA		320	U	320	U	290	U	300	U	320	U	280	U	5.2	U	5.4	U
Dibromochloromethane		96	U	1	U	320	U	320	U	290	U	300	U	320	U	280	U	5.2	U	5.4	U
Dichlorodifluoromethane		NA		NA		320	U	320	U	290	U	300	U	320	U	280	U	5.2	U	5.4	U
Ethylbenzene		1000	J+	0.5	U	320	U	320	U	460		510		320	U	280	U	5.2	U	5.4	U
Isopropylbenzene		NA		NA		660		140	J	280	J	330		1000		280	U	5.2	U	5.4	U
m,p-Xylene		NA		NA		320	U	320	U	2200		2600		320	U	130	J	5.2	U	5.4	U
Methyl Acetate		NA		NA		320	U	320	U	290	U	300	U	320	U	280	U	5.2	U	5.4	U
Methyl tert-butyl ether		NA		NA		320	U	320	U	290	U	300	U	320	U	280	U	5.2	U	5.4	U
Methylcyclohexane		NA		NA		230	J	320	U	72	J	83	J	400		280	U	5.2	U	5.4	U
Methylene chloride		480	U	5	U	320	U	320	U	290	U	300	U	320	U	280	U	5.2	U	5.4	U
o-xylene		NA		NA		320	U	320	U	1200		1400		320	U	80	J	5.2	U	5.4	U
Styrene		96	U	1	U	320	U	320	U	290	U	300	U	320	U	280	U	5.2	U	5.4	U
Tetrachloroethene	60	520		1	U	1100		320	U	220	J	250	J	320	U	280	U	5.2	U	5.4	U
Toluene		100	J+	0.5	U	320	U	320	U	290	U	300	U	320	U	280	U	5.2	U	5.4	U
trans-1,2-Dichloroethene		96	U	1	U	320	U	320	U	290	U	300	U	320	U	280	U	5.2	U	5.4	U
trans-1,3-Dichloropropene		96	U	1	U	320	U	320	U	290	U	300	U	320	U	280	U	5.2	U	5.4	U
Trichloroethene	60	84		0.5	U	320	U	320	U	290	U	300	U	320	U	280	U	5.2	U	5.4	U
Trichlorofluoromethane		NA		NA		320	U	320	U	290	U	300	U	320	U	280	U	5.2	U	5.4	U
Vinyl chloride		48	U	0.5	U	320	U	320	U	290	U	300	U	320	U	280	U	5.2	U	5.4	U
Xylenes, Total		7800	J+	1	U	640	U	640	U	3400		4000		640	U	210	U	10.4	U	10.8	U

Notes:  
All results in micrograms per kilogram  
Shaded results exceed remediation goal  
U = Not detected at value shown  
J = Estimated result  
Q = Qualifier  
NA = Not Analyzed

Table 7-3  
Round 3 Soil Confirmation Sampling Analytical Data  
Souce Area 4 Soil Component RA  
Southeast Rockford Groundwater Contamination Superfund Site

Remediation		STAT		STAT		STAT		STAT		Test America		Test America		Test America		Test America		Test America	
		A4-GP06A-170216 2/16/2017		A4-GP06A-170216D 2/16/2017		A4-GP01A-170216 2/16/2017		A4-GP09A-170216 2/16/2017		SS6-32'-SOL-20170216 2/16/2017		SS1-37'-SOL-20170216 2/16/2017		SS1-37'-SOL-20170216-Dup 2/16/2017		SS9-32'-SOL-20170216 2/16/2017		Trip Blank (ug/L) 2/16/2017	
Analyte	Goal	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
1,1,1-Trichloroethane	9118	5.7	U	5	U	5.3	U	5.3	U	46	U	94	U	46	U	46	U	1	U
1,1,2,2-Tetrachloroethane		5.7	U	5	U	5.3	U	5.3	U	46	U	94	U	46	U	46	U	1	U
1,1,2-Trichloro-1,2,2-trifluoroethane		NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,1,2-Trichloroethane	20	5.7	U	5	U	5.3	U	5.3	U	46	U	94	U	46	U	46	U	1	U
1,1-Dichloroethane		5.7	U	5	U	5.3	U	5.3	U	46	U	94	U	46	U	46	U	1	U
1,1-Dichloroethene	60	5.7	U	5	U	5.3	U	5.3	U	46	U	94	U	46	U	46	U	1	U
1,2,3-Trichlorobenzene		NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,2,4-trichlorobenzene		NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,2-Dibromo-3-chloropropane		NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,2-Dibromoethane		NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,2-Dichlorobenzene		NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,2-Dichloroethane		5.7	U	5	U	5.3	U	5.3	U	46	U	94	U	46	U	46	U	1	U
1,2-Dichloropropane		5.7	U	5	U	5.3	U	5.3	U	46	U	94	U	46	U	46	U	1	U
1,3-Dichlorobenzene		NA		NA		NA		NA		NA		NA		NA		NA		NA	
1,4-Dichlorobenzene		NA		NA		NA		NA		NA		NA		NA		NA		NA	
2-Butanone		85	U	75	U	80	U	79	U	230	U	470	U	230	U	230	U	5	U
2-Hexanone		23	U	20	U	21	U	21	U	230	U	470	U	230	U	230	U	5	U
4-Methyl-2-pentanone		23	U	20	U	21	U	21	U	230	U	470	U	230	U	230	U	5	U
Acetone		14		20		11		7.7		230	U	470	U	230	U	230	U	5	U
Benzene		5.7	U	5	U	5.3	UJ	5.3	U	12	U	24	U	11	U	12	U	0.5	U
Bromochloromethane		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Bromodichloromethane		5.7	U	5	U	5.3	U	5.3	U	46	U	94	U	46	U	46	U	1	U
Bromoform		5.7	U	5	U	5.3	U	5.3	UJ	46	U	94	U	46	U	46	U	1	U
Bromomethane		11	U	10	U	11	U	11	U	92	U	190	U	92	U	92	U	2	U
Carbon disulfide		0.59		0.97		3.2		0.28		92	U	190	U	92	U	92	U	2	U
Carbon tetrachloride	70	5.7	U	5	U	5.3	U	5.3	U	46	U	94	U	46	U	46	U	1	U
Chlorobenzene		5.7	U	5	U	5.3	UJ	5.3	U	46	U	94	U	46	U	46	U	1	U
Chloroethane		11	U	10	U	11	U	11	U	46	U	94	U	46	U	46	U	1	U
Chloroform		5.7	U	5	U	5.3	U	5.3	U	92	U	190	U	92	U	92	U	2	U
Chloromethane		11	U	10	U	11	U	11	U	46	U	94	U	46	U	46	U	1	U
cis-1,2-Dichloroethene		5.7	U	5	U	5.3	U	5.3	U	46	U	94	U	46	U	46	U	1	U
cis-1,3-Dichloropropene		2.3	U	2	U	2.1	U	2.1	U	46	U	94	U	46	U	46	U	1	U
Cyclohexane		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Dibromochloromethane		5.7	U	5	U	5.3	U	5.3	U	46	U	94	U	46	U	46	U	1	U
Dichlorodifluoromethane		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Ethylbenzene		5.7	U	5	U	5.3	UJ	5.3	U	12	U	24	U	11	U	12	U	0.5	U
Isopropylbenzene		NA		NA		NA		NA		NA		NA		NA		NA		NA	
m,p-Xylene		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Methyl Acetate		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Methyl tert-butyl ether		5.7	U	5	U	5.3	U	5.3	U	NA		NA		NA		NA		NA	
Methylcyclohexane		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Methylene chloride		11	U	10	U	11	U	11	U	230	U	470	U	230	U	230	U	5	U
o-xylene		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Styrene		5.7	U	5	U	5.3	U	5.3	UJ	46	U	94	U	46	U	46	U	1	U
Tetrachloroethene	60	5.7	U	5	U	3		5.3	U	46	U	94	U	46	U	46	U	1	U
Toluene		5.7	U	5.7	U	5.7	UJ	5.7	U	12	U	24	U	11	U	12	U	0.5	U
trans-1,2-Dichloroethene		5.7	U	5	U	5.3	U	5.3	U	46	U	94	U	46	U	46	U	1	U
trans-1,3-Dichloropropene		2.3	U	2	U	2.1	U	2.1	U	46	U	94	U	46	U	46	U	1	U
Trichloroethene	60	5.7	U	5	U	5.3	U	5.3	U	23	U	47	U	23	U	23	U	0.5	U
Trichlorofluoromethane		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Vinyl chloride		5.7	U	5	U	5.3	U	5.3	U	23	U	47	U	23	U	23	U	0.5	U
Xylenes, Total		17	U	15	U	16	UJ	16	UJ	23	U	47	U	23	U	23	U	1	U

Notes:  
All results in micrograms per kilogram  
Shaded results exceed remediation goal  
U = Not detected at value shown  
J = Estimated result  
Q = Qualifier  
NA = Not Analyzed

Table 7-3  
Round 3 Soil Confirmation Sampling Analytical Data  
Souce Area 4 Soil Component RA  
Southeast Rockford Groundwater Contamination Superfund Site

Remediation		CLP		CLP		CLP		CLP	
		A4-GP01A-170216 2/16/2017		A4-GP06A-170216 2/16/2017		A4-GP06A-170216-D 2/16/2017		A4-GP09A-170216 2/16/2017	
Analyte	Goal	Result	Q	Result	Q	Result	Q	Result	Q
1,1,1-Trichloroethane	9118	5.6	U	5.3	U	5.5	U	5.4	U
1,1,2,2-Tetrachloroethane		5.6	U	5.3	U	5.5	U	5.4	U
1,1,2-Trichloro-1,2,2-trifluoroethane		5.6	U	5.3	U	5.5	U	5.4	U
1,1,2-Trichloroethane	20	5.6	U	5.3	U	5.5	U	5.4	U
1,1-Dichloroethane		5.6	U	5.3	U	5.5	U	5.4	U
1,1-Dichloroethene	60	5.6	U	5.3	U	5.5	UJ	5.4	U
1,2,3-Trichlorobenzene		5.6	UJ	5.3	U	5.5	U	5.4	U
1,2,4-trichlorobenzene		5.6	UJ	5.3	U	5.5	U	5.4	U
1,2-Dibromo-3-chloropropane		5.6	U	5.3	U	5.5	U	5.4	U
1,2-Dibromoethane		5.6	U	5.3	U	5.5	U	5.4	U
1,2-Dichlorobenzene		5.6	UJ	5.3	U	5.5	U	5.4	U
1,2-Dichloroethane		5.6	U	5.3	U	5.5	U	5.4	U
1,2-Dichloropropane		5.6	U	5.3	U	5.5	U	5.4	U
1,3-Dichlorobenzene		5.6	UJ	5.3	U	5.5	U	5.4	U
1,4-Dichlorobenzene		5.6	UJ	5.3	U	5.5	U	5.4	U
2-Butanone		11	U	11	U	11	U	11	U
2-Hexanone		11	U	11	U	11	U	11	U
4-Methyl-2-pentanone		11	U	11	U	11	U	11	U
Acetone		7.4	J	17		11	U	11	U
Benzene		5.6	U	5.3	U	5.5	U	5.4	U
Bromochloromethane		5.6	U	5.3	U	5.5	U	5.4	U
Bromodichloromethane		5.6	U	5.3	U	5.5	U	5.4	U
Bromoform		5.6	U	5.3	U	5.5	U	5.4	U
Bromomethane		5.6	U	5.3	U	5.5	U	5.4	U
Carbon disulfide		5.6	U	5.3	U	5.5	U	5.4	U
Carbon tetrachloride	70	5.6	U	5.3	U	5.5	U	5.4	U
Chlorobenzene		5.6	UJ	5.3	U	5.5	U	5.4	U
Chloroethane		5.6	U	5.3	U	5.5	U	5.4	U
Chloroform		5.6	U	5.3	U	5.5	U	5.4	U
Chloromethane		5.6	U	5.3	U	5.5	U	5.4	U
cis-1,2-Dichloroethene		5.6	U	5.3	U	5.5	UJ	5.4	U
cis-1,3-Dichloropropene		5.6	U	5.3	U	5.5	U	5.4	U
Cyclohexane		5.6	U	5.3	U	5.5	U	5.4	U
Dibromochloromethane		5.6	U	5.3	U	5.5	U	5.4	U
Dichlorodifluoromethane		5.6	U	5.3	U	5.5	U	5.4	U
Ethylbenzene		5.6	U	5.3	U	5.5	U	5.4	U
Isopropylbenzene		120		5.3	U	5.5	U	5.4	U
m,p-Xylene		5.6	U	5.3	U	5.5	U	5.4	U
Methyl Acetate		5.6	U	5.3	U	5.5	U	5.4	U
Methyl tert-butyl ether		5.6	U	5.3	U	5.5	U	5.4	U
Methylcyclohexane		5.6	U	5.3	U	5.5	U	5.4	U
Methylene chloride		5.6	U	5.3	U	5.5	U	5.4	U
o-xylene		5.6	U	5.3	U	5.5	U	5.4	U
Styrene		5.6	U	5.3	U	5.5	U	5.4	U
Tetrachloroethene	60	5.6	U	5.3	U	5.5	U	5.4	U
Toluene		5.6	U	5.3	U	5.5	U	5.4	U
trans-1,2-Dichloroethene		5.6	U	5.3	U	5.5	UJ	5.4	U
trans-1,3-Dichloropropene		5.6	U	5.3	U	5.5	U	5.4	U
Trichloroethene	60	5.6	U	5.3	U	5.5	U	5.4	U
Trichlorofluoromethane		5.6	U	5.3	U	5.5	U	5.4	U
Vinyl chloride		5.6	U	5.3	U	5.5	U	5.4	U
Xylenes, Total		11.2	U	10.8	U	11	U	10.8	U

Notes:  
All results in micrograms per kilogram  
Shaded results exceed remediation goal  
U = Not detected at value shown  
J = Estimated result  
Q = Qualifier  
NA = Not Analyzed

Table 7-4  
Round 1 Split Soil Confirmation Samples Comparison  
Souce Area 4 Soil Component RA  
Southeast Rockford Groundwater Contamination Superfund Site

Analyte	Remediation Goal	STAT A4-GP01A-161215		Test America SS1-37'		CLP A4-GP02A-161214		Test America SS2-37'-SOL-20161214		CLP A4-GP03A-161214		Test America SS3-32'-SOL-20161214		STAT A4-GP08A-161215		STAT A4-GP08A-161215D A4-GP08A-161215 FD	
		N 12/15/2016		N 12/15/2016		N 12/14/2016		N 12/14/2016		N 12/14/2016		N 12/14/2016		N 12/15/2016		N 12/15/2016	
		Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
1,1,1-Trichloroethane	9118	280	U	510	U	5.4	UJ	1.9	U	310	U	460	U	330		300	U
1,1,2-Trichloroethane	20	280	U	510	U	5.4	U	1.9	U	310	U	460	U	280	U	300	U
1,1-Dichloroethene	60	280	U	510	U	5.4	UJ	1.9	U	310	U	420	J	280	U	300	U
Carbon tetrachloride	70	280	U	510	U	5.4	UJ	1.9	U	310	U	460	U	280	U	300	U
Tetrachloroethene	60	740		560		5.4	U	1.9	U	310	U	460	U	540		500	
Trichloroethene	60	280	U	250	U	5.4	U	1.9	U	310	U	23	U	280	U	300	U

Analyte	Remediation Goal	Test America SS8-37'		STAT A4-GP09A-161215		Test America SS9-32'		STAT A4-GP11A-161215		Test America SS11-24'		A4-GP11A-161215		CLP A4-GP11A-161215-D A4-GP11A-161215 FD		STAT A4-GP11B-161215	
		N 12/15/2016		N 12/15/2016		N 12/15/2016		N 12/15/2016		N 12/15/2016		N 12/15/2016		N 12/15/2016		N 12/15/2016	
		Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
1,1,1-Trichloroethane	9118	400	J	5.5	U	99	U	5.8	U	51	U	6.0	U	6.1	U	5.7	U
1,1,2-Trichloroethane	20	490	U	5.5	U	99	U	5.8	U	51	U	6.0	U	6.1	U	5.7	U
1,1-Dichloroethene	60	490	U	15		99	U	5.8	U	51	U	6.0	U	6.1	U	5.7	U
Carbon tetrachloride	70	490	U	5.5	U	99	U	5.8	U	51	U	6.0	U	6.1	U	5.7	U
Tetrachloroethene	60	440	J	77		86	J	5.8	U	51	U	6.0	U	6.1	U	5.7	U
Trichloroethene	60	250	U	25		49	U	5.8	U	25	U	6.0	U	6.1	U	5.7	U

Analyte	Remediation Goal	Test America SS11-32' 12/15/2016		CLP A4-GP11B-161215 12/15/2016		STAT A4-GP12A-161215 12/15/2016		Test America SS12-24' 12/15/2016		STAT A4-GP13A-161214 12/14/2016		Test America SS13-24'-SOL-20161214 12/14/2016		CLP A4-GP13A-161214 12/14/2016		STAT A4-GP13B-161214 12/14/2016	
		N 12/15/2016		N 12/15/2016		N 12/15/2016		N 12/15/2016		N 12/14/2016		N 12/14/2016		N 12/14/2016		N 12/14/2016	
		Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
1,1,1-Trichloroethane	9118	460	U	5.1	U	5.4	U	51	U	6	U	49	U	6.7	U	5.7	U
1,1,2-Trichloroethane	20	460	U	5.1	U	5.4	U	51	U	6	U	49	U	6.7	U	5.7	U
1,1-Dichloroethene	60	460	U	5.1	UJ	5.4	U	51	U	6	U	49	U	6.7	U	5.7	U
Carbon tetrachloride	70	460	U	5.1	U	5.4	UJ	51	U	6	U	49	U	6.7	U	5.7	U
Tetrachloroethene	60	460	U	1.5	J	5.4	U	51	U	6	U	49	U	6.7	U	5.7	U
Trichloroethene	60	230	U	5.1	U	5.4	U	26	U	6	U	24	U	6.7	U	5.7	U

Notes:  
All results in micrograms per kilogram  
Shaded results exceed remediation goal  
U = Not detected at value shown  
J = Estimated result  
Q = Qualifier



Table 7-4  
Round 1 Split Soil Confirmation Samples Comparison  
Souce Area 4 Soil Component RA  
Southeast Rockford Groundwater Contamination Superfund Site

Analyte	Remediation Goal	Test America SS13-32'-SOL-20161214		CLP A4-GP13B-161214		STAT A4-GP14A-161214		Test America SS14-24'-SOL-20161214		CLP A4-GP14A-161214		STAT A4-GP14B-161214		Test America SS14-37'-SOL-20161214	
		N 12/14/2016		N 12/14/2016		N 12/14/2016		N 12/14/2016		N 12/14/2016		N 12/14/2016		N 12/14/2016	
		Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
1,1,1-Trichloroethane	9118	99	U	5.5	U	5.5	U	50	U	5.6	U	290	U	46	U
1,1,2-Trichloroethane	20	99	U	5.5	U	5.5	U	50	U	5.6	U	290	U	46	U
1,1-Dichloroethene	60	99	U	14		5.5	U	50	U	5.6	U	290	U	46	U
Carbon tetrachloride	70	99	U	5.5	U	5.5	U	50	U	5.6	U	290	U	46	U
Tetrachloroethene	60	99	U	150	J+	5.5	U	50	U	5.6	U	290	U	46	U
Trichloroethene	60	26	J	3.9	J+	5.5	U	25	U	5.6	U	290	U	23	U

Analyte	Remediation Goal	Test America SS15-16'-SOL-20161214		CLP A4-GP15A-161214		Test America SS15-32'-SOL-20161214		Test America SS15-32'-SOL-20161214-Dup SS15-32'-SOL-20161214 FD		CLP A4-GP15B-161214		Test America SS18-24'-SOL-20161213		CLP A4-GP18A-161213	
		N 12/14/2016		N 12/14/2016		N 12/14/2016		N 12/14/2016		N 12/14/2016		N 12/13.2016		N 12/13/2016	
		Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
1,1,1-Trichloroethane	9118	1.8	U	5.5	UJ	100	U	100	U	5.3	U	1.6	U	5.5	U
1,1,2-Trichloroethane	20	1.8	U	5.5	U	100	U	100	U	5.3	U	1.6	U	5.5	U
1,1-Dichloroethene	60	1.8	U	5.5	U	100	U	100	U	5.3	U	1.6	U	5.5	U
Carbon tetrachloride	70	1.8	U	5.5	UJ	100	U	100	U	5.3	U	1.6	U	5.5	U
Tetrachloroethene	60	1.8	U	5.5	U	67	J	110		9.7		1.6	U	5.5	U
Trichloroethene	60	1.8	U	5.5	U	52	U	50	U	5.3	U	1.6	U	5.5	U

Notes:  
All results in micrograms per kilogram  
Shaded results exceed remediation goal  
U = Not detected at value shown  
J = Estimated result  
Q = Qualifier

Table 7-5  
Round 2 Split Soil Confirmation Samples Comparison  
Souce Area 4 Soil Component RA  
Southeast Rockford Groundwater Contamination Superfund Site

Analyte	Remediation Goal	STAT A4-GP01A-170117 01/17/2017		Test America SS1-37'-SOL-20170117 01/17/2017		CLP A4-GP01A-170117 01/17/2017		STAT A4-GP03A-170116 01/16/2017		Test America SS3-32'-SOL-20170116 01/16/2017		CLP A4-GP03A-170116 01/16/2017		STAT A4-GP06A-170117 01/17/2017		Test America SS6-32'-SOL-20170117 1/17/2017		CLP A4-GP06A-170117 01/17/2017		CLP A4-GP06A-170117-D 1/17/2017		STAT A4-GP08A-170117 1/17/2017		Test America SS8-37'-SOL-20170117 1/17/2017		CLP A4-GP08A-170117 1/17/2017	
		Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
1,1,1-Trichloroethane	9118	260	U	97	U	320	U	250	U	95	U	320	U	260	U	96	U	290	U	300	U	280	U	91	U	320	U
1,1,2-Trichloroethane	20	260	U	97	U	320	U	250	U	95	U	320	U	260	U	9	U	290	U	300	U	280	U	91	U	320	U
1,1-Dichloroethene	60	260	U	97	U	320	U	250	U	95	U	320	U	260	U	96	U	290	U	300	U	280	U	91	U	320	U
Carbon tetrachloride	70	260	U	97	U	320	U	250	U	95	U	320	U	260	U	96	U	290	U	300	U	280	U	91	U	320	U
Tetrachloroethene	60	740		1700		1100		250	U	95	U	320	U	210		520		220	J	250	J	280	U	91	U	320	U
Trichloroethene	60	260	U	49	U	320	U	250	U	47	U	320	U	120		84		290	U	300	U	23		46	U	320	U

Analyte	Remediation Goal	STAT A4-GP09A-170116 1/16/2017		Test America SS9-32'-SOL-20170116 01/16/2017		CLP A4-GP09A-170116 1/16/2017		STAT A4-GP15L-170116 1/16/2017		Test America SS15-32'-SOL-2017 1/16/2017		CLP A4-GP15C-170116 1/16/2017		Test America SS17-32'-SOL-20170116 1/16/2017		Test America SS17-32'-SOL-20170116-DUP 1/16/2017		CLP A4-GP17A-170116 01/16/2017	
		Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
1,1,1-Trichloroethane	9118	5.2	U	88	U	280	U	5.2	U	4.9	U	52	U	5.2	U	46	U	46	U
1,1,2-Trichloroethane	20	5.2	U	88	U	280	U	5.2	U	4.9	U	52	U	5.2	U	46	U	46	U
1,1-Dichloroethene	60	5.2	U	88	U	280	U	5.2	U	4.9	U	52	U	5.2	U	46	U	46	U
Carbon tetrachloride	70	5.2	U	88	U	280	U	5.2	U	4.9	U	52	U	5.2	U	46	U	46	U
Tetrachloroethene	60	11		77	J	280	U	5.2	U	4.9	U	52	U	5.2	U	46	U	46	U
Trichloroethene	60	5.2	U	44	U	280	U	5.2	U	4.9	U	26	U	5.2	U	23	U	23	U

Notes:  
All results in micrograms per kilogram  
Shaded results exceed remediation goal  
U = Not detected at value shown  
J = Estimated result  
Q = Qualifier

Table 7-6  
Round 3 Split Soil Confirmation Samples Comparison  
Souce Area 4 Soil Component RA  
Southeast Rockford Groundwater Contamination Superfund Site

Analyte	Remediation Goal	STAT A4-GP01A-170216 02/16/2017		Test America SS1-37'-SOL-20170216 02/16/2017		SS1-37'-SOL-20170216-Dup 2/16/2017		CLP A4-GP01A-170216 02/16/2017		STAT A4-GP06A-170216 02/16/2017		A4-GP06A-170216D 02/16/2017		Test America SS6-32'-SOL-20170216 02/16/2017		CLP A4-GP06A-170216 02/16/2017		A4-GP06A-170216-D 02/16/2017		STAT A4-GP09A-170216 02/16/2017		Test America SS9-32'-SOL-20170216 02/16/2017		CLP A4-GP09A-170216 02/16/2017	
		Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
1,1,1-Trichloroethane	9118	5.3	U	94	U	46	U	5.6	U	5.7	U	5	U	46	U	5.3	U	5.5	U	5.3	U	46	U	5.4	U
1,1,2-Trichloroethane	20	5.3	U	94	U	46	U	5.6	U	5.7	U	5	U	46	U	5.3	U	5.5	U	5.3	U	46	U	5.4	U
1,1-Dichloroethene	60	5.3	U	94	U	46	U	5.6	U	5.7	U	5	U	46	U	5.3	U	5.5	U	5.3	U	46	U	5.4	U
Carbon tetrachloride	70	5.3	U	94	U	46	U	5.6	U	5.7	U	5	U	46	U	5.3	U	5.5	U	5.3	U	46	U	5.4	U
Tetrachloroethene	60	3		94	U	46	U	5.6	U	5.7	U	5	U	46	U	5.3	U	5.5	U	5.3	U	46	U	5.4	U
Trichloroethene	60	5.3	U	47	U	23	U	5.6	U	5.7	U	5	U	23	U	5.3	U	5.5	U	5.3	U	23	U	5.4	U

Notes:  
All results in micrograms per kilogram  
Shaded results exceed remediation goal  
U = Not detected at value shown  
J = Estimated result  
Q = Qualifier

**Table 7-7**  
**Compounds Exceeding Remediation Goals in Groundwater**  
**Souce Area 4 ERH Soil Component**  
**Southeast Rockford Groundwater Contamination Superfund Site**

EPA Sample ID Station Location Sample Date		E3Y14 A4-EW003 10/3/2016	E3Y16 A4-MW022A 10/3/2016	E3Y17 A4-MW022B 10/3/2016	E3Y08 A4-MW032A 10/3/2016	E3Y09 A4-MW032A 10/3/2016	E3Y18 A4-MW130A 10/3/2016	E3Y19 A4-MW130B 10/3/2016	E3Y11 A4-MW401A 10/3/2016	E3Y12 A4-MW401B 10/3/2016	E3Y10 A4-MW403 10/3/2016	E3Y53 A4-EW001 5/30/2017	E3Y54 A4-EW002 5/30/2017	E3Y55 A4-EW003 5/30/2017
Analyte Name	RG	INITIAL	INITIAL	INITIAL	INITIAL	INITIAL	INITIAL	INITIAL	INITIAL	INITIAL	INITIAL	INITIAL	INITIAL	INITIAL
1,1,1-Trichloroethane	200	210	0.69	7.6	4.5	4.7	8	8.6	4.2	8	12	7.5	5.9	6.1
1,1-Dichloroethane	1,400	59	0.5U	9.5	5.7	5.8	9.6	11	4.4	11	2.7	5.9J	12J	11
1,1-Dichloroethene	7	5U	0.5U	1.6	1.1	0.96	1.8	1.9	0.88	0.5U	0.99J-	1.6	6.1	7.1
Bromodichloromethane	0.2*	5U	0.5U	0.5U	0.94	0.96	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	5U
Carbon Tetrachloride	5	5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	5U
Chloroform	70	5U	0.5U	0.5U	1.4	1.5	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	5U
cis-1,2-Dichloroethene	70	3.2J	0.5U	1.8	1.6	1.6	2	2.2	1	2.4	0.59J-	1.7	1.9	2.3J
Dibromochloromethane	140*	5U	0.5U	0.5U	0.63	0.7	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	5U
Dichlorodifluoromethane (Freon 12)	1,400	5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	5U
Ethyl Benzene	700	5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	5U
Isopropyl Benzene	700	5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	5U
Tetrachloroethene	5	5U	0.5U	0.37J	0.6	0.55	0.41J	0.38J	0.14J	0.4J	0.19J	0.42J	0.63	5U
Toluene	1,000	5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	5U
trans-1,2-Dichloroethene	100	5U	0.5U	0.29J	0.5U	0.18J	0.23J	0.28J	0.5U	0.32J	0.5U	0.23J	0.27J	5U
Trichloroethene	5	1.3J	0.11J	1.2	1.3	1.3	1.4	1.4	0.48J	1.4	0.33J	1.3	1.3	1.4J
Trichlorofluoromethane (Freon 11)	2,100	5U	0.5U	0.4J	0.5U	0.5U	0.5U	0.34J	0.5U	0.5U	0.5U	0.5U	0.5U	5U
Xylene (total)	10,000	1J	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.1J	0.5U	0.24J	3.5J

**Notes:**

All results in micrograms per liter

Remediation goals from Record of Decision  
or Class I Groundwater Standard from  
35 IAC 620.410

\* = Remediation goal from TACO (35 IAC 742)

Shaded results exceed remediation goal

D = Diluted sample result

U = Not detected at value shown

J = Estimated result

**Table 7-7**  
**Compounds Exceeding Remediation Goals in Groundwater**  
**Souce Area 4 ERH Soil Component**  
**Southeast Rockford Groundwater Contamination Superfund Site**

EPA Sample ID Station Location Sample Date		E3Y59 A4-MW022A 5/30/2017	E3Y60 A4-MW022B 5/30/2017	E3Y61 A4-MW032A 5/30/2017	E3Y62 A4-MW032A 5/30/2017	E3Y57 A4-MW130A 5/30/2017	E3Y58 A4-MW130B 5/30/2017	E3Y63 A4-MW401A 5/30/2017	E3Y64 A4-MW401B 5/30/2017	E3Y65 A4-MW403 5/30/2017
Analyte Name	RG	INITIAL	INITIAL	INITIAL	INITIAL	INITIAL	INITIAL	INITIAL	INITIAL	INITIAL
1,1,1-Trichloroethane	200	6.7	7.2	5.2	5.4	8.5	7.9	8.5	7	2
1,1-Dichloroethane	1,400	0.5UJ	12J	5.8J	9.3J	14J	13J	8.7J	13J	3.3J
1,1-Dichloroethene	7	0.5U	1.2	0.99	1	1.8	1.5	1.5	1.4	1.1
Bromodichloromethane	0.2*	0.5U	0.5U	0.95	0.99	0.5U	0.5U	0.5U	0.5U	0.5U
Carbon Tetrachloride	5	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U
Chloroform	70	0.5U	0.5U	1.2	1.2	0.5U	0.5U	0.5U	0.5U	0.5U
cis-1,2-Dichloroethene	70	0.5U	1.8	2	2	2	2	1.8	2.1	0.58
Dibromochloromethane	140*	0.5U	0.5U	0.72	0.71	0.5U	0.5U	0.5U	0.5U	0.5U
Dichlorodifluoromethane (Freon 12)	1,400	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U
Ethyl Benzene	700	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U
Isopropyl Benzene	700	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U
Tetrachloroethene	5	0.5U	0.4J	0.59	0.61	0.45J	0.43J	0.35J	0.45J	0.25J
Toluene	1,000	0.58	0.5U	0.5U	0.5U	0.5U	0.23J	0.5U	0.5U	0.25J
trans-1,2-Dichloroethene	100	0.5U	0.29	0.22J	0.24J	0.26J	0.5U	0.5U	0.27J	0.5U
Trichloroethene	5	0.5U	1.4	1.5	1.6	1.5	1.5	1.3	1.4	0.5U
Trichlorofluoromethane (Freon 11)	2,100	0.5U	0.3J	0.5U	0.5U	0.5U	0.25J	0.5U	0.5U	0.5U
Xylene (total)	10,000	0.75J	0.21J	0.5U	0.5U	0.5U	0.23J	0.5U	0.5U	0.27J

**Notes:**

All results in micrograms per liter

Remediation goals from Record of Decision  
or Class I Groundwater Standard from  
35 IAC 620.410

\* = Remediation goal from TACO (35 IAC 742)

Shaded results exceed remediation goal

D = Diluted sample result

U = Not detected at value shown

J = Estimated result

## Appendix A

### CDM Smith Field Documentation

- Executed Consent for Access to Property
- Logbook Notes
- Soil Lithology and PID Readings
- Daily Reports

## Executed Consent for Access to Property

11-48892

2010300094  
South East  
Rockford  
SF/tech

CONSENT FOR ACCESS TO PROPERTY  
(H & H Wood Products and Pallets)  
(Rockford, Illinois)

Name: H & H Wood Products and Pallets, c/o: Fred Kaehler and Vickie Eash Kaehler

Address of Property: 2630 Marshall Avenue, Rockford (Winnebago county), Illinois

We consent to officers, employees, contractors, and authorized representatives of the United States Environmental Protection Agency (U.S. EPA) and Illinois EPA (IEPA) entering and having continued access to this property for the following purposes:

- Containing hazardous materials present on the property;
- Conducting monitoring and sampling activity;
- Preparing for and disposing of hazardous materials;
- Performing other actions to investigate contamination on the property that U.S. EPA may determine to be necessary; and
- Taking any response or remedial action to address any release or threatened release of a hazardous substance, pollutant or contaminant which U.S. EPA/IEPA determine may pose an imminent and substantial endangerment to the public health or the environment.

We realize that these actions taken by U.S. EPA/IEPA are undertaken pursuant to its response and enforcement responsibilities under the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended, 42 U.S.C. §9601 et seq.

This written permission is given by us voluntarily, on behalf of ourselves and all other co-owners of this property, with knowledge of our right to refuse and without threats or promises of any kind.

9-18-94  
Date

Fred Kaehler  
Signature - Mr. Fred Kaehler

\_\_\_\_\_  
Date

Vickie Eash Kaehler  
Signature - Ms. Vickie Eash Kaehler

**COPY**

**RECEIVED**

OCT 05 2004

IEPA-BOL-FORS



## Logbook Notes

Location \_\_\_\_\_ Date \_\_\_\_\_

Project / Client \_\_\_\_\_

Location SE ROCKford Date 11/12/16

Project / Client Area 4 ERM RD  
Illinois EPA

0915 com Smith onsite @  
Area 4 job trailer.  
John Grabs + Ryan  
Wymore.

weather: cold, 50f, clear,  
breezy, 14 mph.

PPE: mod. Level D

Plan: For today, start of  
Area 4 ERM project.  
meeting TRS + IEPA  
for kick-off meeting,  
site visit. TRS will  
also collect a few pre-  
design samples. Should  
be out of here by 2:00  
th. John showing  
Ryan around while we  
wait for others to  
arrive.

1000 At job trailer.

1010 Brian Conrath, IEPA, just  
arrived. Just talked to

11/12/16 Chris Thomas TRS, and  
11/12/16 he's already at the site  
11/12/15

Location SE Rockford Date 1/12/15  
 Project / Client Area 4 ERH RD  
Illinois EPA

cont. So we will head over in a few.

1:15 looked at various things.  
 Most important thing discussed is needing to talk out a loading dock for install of probes.

John Grobs & Ryan off-site

1/12/16  
 J.M. 8/13/16

1/12/15

*[Signature]*

Location SE Rockford Date 6/30/16  
 Project / Client Area 4 ERA RAO  
Illinois EPA

0900 J. Grobs, CDM Smith, at Area 4 trailer.

Weather: Sunny, 71°F, slight breeze

PPE: mod. Level D

Plan: Here to conduct RA oversight (RAO) of TRS mobilization activities. Activities will include removal of loading dock inside building, putting up security fence, etc. TRS actually started work yesterday. First need to don appropriate PPE and will then head over to site.

0940 Finally over at the site. After a quick look around, fence is around 7/3 complete, loading dock is mostly gone, supplies are staged, and some corings through concrete floor have been cut.

*[Signature]*  
 6/30/16



Location SE Rockford Date Thur 6/30/16  
 Project / Client Area 4 ERH RAO  
Illinois EPA

- 045 Back at Area 4 trailer. Talked w/ Brad Morris (Bm), TRS, about a few things and took a look around. A few notes:
- recommended that they have a mtg w/ Police/Fire because they will most likely have to respond to alarm system at some point.
  - Building has been made as secure as it can be. Broken lock on south main door has been replaced and they've boarded up some other things (doors + windows).
  - Brad has talked to neighbors across the street and gave them his card.
  - Union Bt stopped by yesterday, they will be taking this as it goes. Primary drillers are union.

*[Signature]*  
 6/30/16

Location SE Rockford Date Thur 6/30/16  
 Project / Client Area 4 ERH RAO  
Illinois EPA

- (cont.) - All the crap that was in the south bay has been moved and nicely arranged, to the north end of the building.
- One set of drillers will be showing up around 10:00 am on Tuesday. The other one, early afternoon.

11:30 Head off for lunch.

12:20 Back at Area 4 after lunch. Fence almost done. West side of fence is temporary fencing for now, until install is complete. Then more permanent fence will be put in.

Another issue is getting the water turned back on.

They are going to pay the bill and back bill, but the City is being funny and wants proof the County has taken the building.

*[Signature]* 6/30/16

Location SE Rockford <sup>Thurs.</sup> Date 6/30/16  
 Project / Client Area 4 EPA RAO  
Illinois EPA

(cont.) I told Brad I don't the status of that. Apparently Chris Thomas sent Brian an email about it.

14:00 Off-site, will be back on Tue, 7/5 at around 10:00 am.

6/30/16

John

Location SE Rockford <sup>Tue</sup> Date 7/5/16  
 Project / Client Area 4 EPA RAO  
Illinois EPA

0920 John Grobs, CDM Smith, on site at Area 4 trailer.  
weather: 75° F, mostly cloudy, slight breeze. Forecast to clear up a little and go to mid 80s.

PPE: modified level D.

Plan: 8/5/16 Conduct RAO of various probe install activities. Dave Rojas, CDM Smith, will be main <sup>sup</sup> person for this stage of work. He should arrive a little after lunch.

On the way in, drove by site. One pickup outside of fence and bay door is open. will don PPE and head over in a bit.

0955 stopped at site. There's a Cowled crew here looking at what needs to be done for the hook-up and a Julie joint meet.

7/5/16



Location SE Rockford Date Tue 7/5/16  
 Project / Client Area 4 ERA RAO  
IEPA

(cont.) However, all their stuff is overhead. One TRS ~~is~~ <sup>is not</sup> here, Kevin.

A few minutes later, a guy from Terra Probe showed up. Steve. TP is doing the inside work. Steve is here for the utility clearance. Those drill rigs are a couple hours behind at the moment. There isn't anyone here for TRS that seem to be in charge. The pick-up I saw earlier is not present. I noted that utilities have been marked.

0:17 Com Ed crews leave.

Will go back to trailer.

Actually, going to Home Depot for supplies.

1:23 Jeff, TRS, is here. I met him last week. Apparently the water hook-up is still an issue. Utility guy from Terra Probe appears to be finishing up.

Backed Area 4

7/5/16

Location SE Rockford Date Tue 7/5/16  
 Project / Client Area 4 RAO  
IEPA

AM 7/5/16

12:10 Terra & Probe guys arrived. One truck/trailer with a small tractor and another w/ a geoprobe.

And a few minutes later a truck w/ two roll offs just pulled up. Roll offs are for drill cuttings.

The Terra Probe guys will probably unload, set up, and then take lunch. TRS guys were talking about lunch earlier, but needed to wait for roll offs.

1245 TRS guys going to lunch. me too!

1320 Back at Area 4. Terra Probe (TP) still unloading but almost done. A couple minutes later, David Rojas arrives. Will walk him around the site. TP guys just took off for lunch.

7/5/16



Location S.E. Rockford Date Tue 7/15/16  
 Project / Client Area 4 ERH RAO  
IEPA

- 1500 Back at Area 4. John Grobs off site and relinquishing logbook to David Rojas.
- 1515 TRS personnel Ted Highley, Kevin Riffe & Jeff Riffe conducted a health & safety meeting with the 3 ~~TRR~~ personnel w/ Terra Probe Environmental, Inc (Terra) that are onsite: Steve Averly, Joe Foigtik and Luke ~~Hindrich~~ <sup>Wedwaldt</sup>. Terra personnel are still performing an inventory of their supplies & identifying items they need to procure.
- 1530 Terra personnel left the site for the day to buy needed supplies. TRS personnel are continuing to conduct inventory of supplies onsite and are securing them and the site. Ted informed David that contaminated soil was encountered @ ~3-4' bgs while advancing pilot holes for gate fenceposts ~40' south of proposed electrode H2 location.
- 1600 David Rojas left site in route to hotel as TRS personnel complete site securing operations. — D. Rojas 7/15/16 —

Location S.E. Rockford Date Wed 7/16/16  
 Project / Client Area 4 ERH Remedial Action  
IEPA

- 0705 CDM Smith personnel (David Rojas) onsite @ Area 4 preparing to continue oversight of TRS & drilling subcontractors as they begin installation of ERH system.
- WEATHER: 71°F, cloudy, wind ~5-8 mph NW, light rain (mod to heavy overnight) Forecasted to cease raining mid morning, but heavy rain overnight & into tomorrow
- PPE: Modified Level D
- PLAN: Terra to begin installation of MPE Electrodes
- 0715: Jeff Riffe & Kevin Riffe (TRS) are already onsite. Ted Highley (TRS) arrived onsite.
- 0725 Joe Foigtik & Luke Wedwaldt (Terra) onsite.
- 0730 TRS conducted W&S meeting w/ CDM Smith & Terra personnel. Both TRS & Terra personnel continue to move supplies in position to prepare to begin drilling inside building.
- 0745 Terra move in and rigged up (MIRU) DPT 6620 tree mounted DPT rig over proposed location of MPE electrode L4 and prepared to begin advancing 11 1/4" <sup>w/10 teeth</sup> but on 10 1/4" solid stem augers (SSA).
- D. Rojas 7/16/16 —



Location S.E. Rockford Date Wed 7/6/16  
 Project / Client Area 4 ERH RA (MPE L4)  
IEPA

0755 Terra begin advancing SSAs @ proposed MPE electrode L4 location.  
 0-1' Sand, f.gw, <sup>lt-med</sup> org. biom, dry, no odor  
 1'-5' Sand, f.gw, black, no odor, dry  
 5'-10' Sand, f-m gw, med org. biom, <sup>no odor</sup>  
 10'-30' SAND, f-m gw, lt-med org. biom, dry, <sup>no odor</sup>  
 30'-35' SAND, f-m gw, lt-med org. biom, no odor  
 35'-39' SAND, f-m gw, lt-med org. biom, <sup>moist to wet</sup> no odor, wet

0845 Terra completed advancing SSAs to 35' bgs. Collings are being transported in bucket of tractor to south lined roll-off. Begin pulling out of hole (POH) w/SSAs. After POH w/SSAs dropped weighted tape and tagged bottom @ ~24 bgs (no water). Note: TRS is still awaiting delivery of vapor monitoring equipment which will be equal w/an 11-7 detector.

0940 <sup>Terra</sup> Began Running in hole (RIH) w/12 1/4" hollow stem auger (HSA) @ L4 location <sup>with wooden plug</sup>

1025 After advancing HSAs to 25' b/s, change the HSAs w/~15 gallons of water before continuing to advance HSAs then add ~10 gal @ each connector. — D Rye 7/6/16 —

Location S.E. Rockford Date Wed 7/6/16  
 Project / Client Area 4 ERH RA (MPE L4)  
IEPA

1045 Completed advancing HSAs to 39.5' bgs and begin lowering 4" black iron vertical, 40 slot sch 40 pipe inside HSAs (10.5' long joints connected w/steel couplers)

1135 Completed lowering 3 10.5' & 1 8' joints of steel pipe (Note: 8' is only, skirted in bottom 3') & begin POH w/HSA while dumping graphite/shot mix inside annulus between pipe & inside HSAs (Note: graphite shot mix = 3 50 lb bags of graphite <sup>SWSE Earth Contact Products 11/17</sup> & 1 50 lb bag of iron shot ~0.01" mixed in wheel barrow). Dump one 3/1 mix in HSA between POH w/each 5' jt of HSAs leaves ~1' of mix inside HSAs.

1255 Completed POH w/HSAs. Top of mix in annulus @ ~2' bgs after dumping 10 3/1 mixes. See well constructing diagram on pg 18

1310 All personnel left site for lunch. Locking gate upon departure.

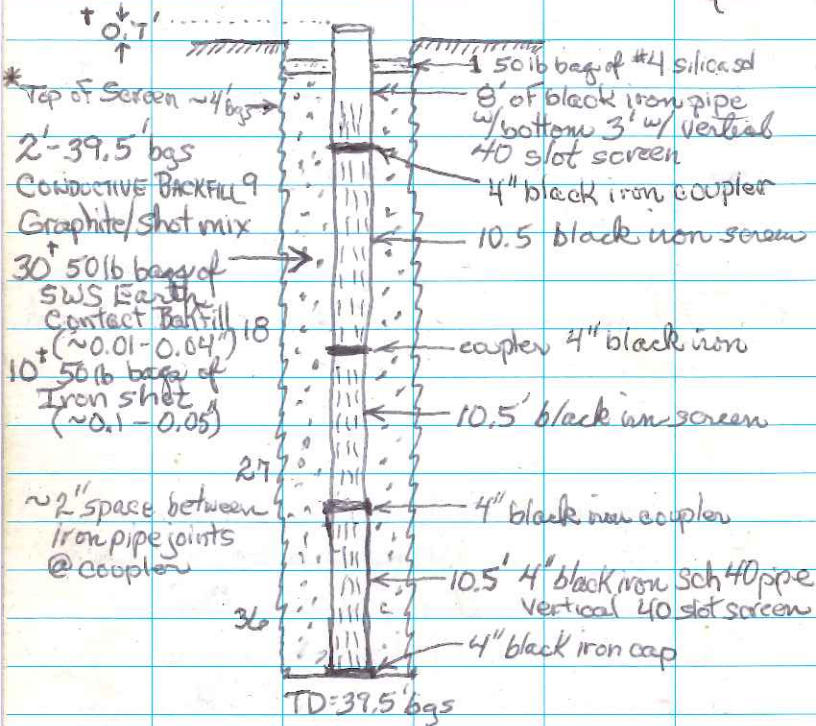
1340 David Rojas returned to site w/o others.

1405 TRS & Terra personnel returned to site. Terra dumped a 50 lb bag of #4 silica sand in annulus from 2'-1.5' bgs. TRS attempted to lower WH meter probe inside L4 to tag WH bot. WH meter multifunctional. — D Rye 7/6/16 —



Location S.E. Rockford Date Wed 7/6/16  
 Project / Client Area 4 ERH RA (MPE L4)  
IEPA

### CONSTRUCTION OF MPEs L4 & L5 (ZONE 1)



\* Top of 40 slot screen  $\approx$  4' bgs.

+ Quantities are for L4 only

1430 TRS repaired Wt meter and tagged  
 water level (WL) in MPE L4 @ 27.4 bgs

Location S.E. Rockford Date Wed 7/6/16  
 Project / Client Area 4 ERH RA (MPE L5)  
IEPA

1425 Terra MIRU DPT rig @ proposed loc  
 of MPE L5, remove cored concrete plug  
 and prepare to begin advancing SSAs.

1445 Terra began advancing SSAs @ L5

PID  
 0.0 ppm 0-4' GRAVELY SD, blk, sd is fgm, dry, no odor  
 0.0 4-8' SD, blk, fgm, dry to slt moist, no odor  
 1.2 8-11' SD, dk to med org bw, fgm, moist, slt odor  
 7.8 11-26 SD, dk org bw to gray bw, fgm, moist, strong odor  
 \* 26-39 SD, AA. except wet & some coarse  
 mud gun

\* Battery of MiniRAE is dead

1505 Terra completed advancing SSAs to 35' bgs  
 Cuttings were dumped in north lined roll off  
 (due to strong odor). POH w/ SSAs. Highest  
 PID reading = 22 ppm in workspace.

1543 Terra began RIH w/ 1 1/4 HSA's, after tagging  
 bottom of pilot hole @ ~19.5' bgs. After RIH  
 w/ 20' of HSA's began changing HSA's w/ water  
 before advancing HSA's. TRS collected  
 a sample of cuttings off SSAs when Terra  
 was POH. Ted suggested that TRS may  
 have sample analyzed to determine if  
 contaminants are amenable to the proposed  
 remedial method).



Location S.E. Rockford Date Wed 7/6/16  
 Project / Client Area 4 ERH RA (MPE L5)  
IEPA

- 1645 Terra completed advancing HSAs to 39.5' bgs and TRS began lowering iron pipe inside HSAs, making up the joints of pipe using forklift to transport to MPE location and lower inside HSAs
- 1705 TRS completed lowering pipe & Terra attempted to begin POH w/ HSAs but unable to get pipe to unseat wooden plug. Terra used percussive head to drive pipe through wooden plug then began POH w/ HSAs while dumping 3/1 Graphite shot mix. See well construction fig. pg 18
- Stick up = 0.9' w/ - see pg 21
- 1845 Terra completed POH w/ HSAs and TRS verified that top of graphite/shot mix has been brought up to ~2' by after ~9.3 3/1 mixers.
- 1855 Terra & TRS began securing equipment & site.
- 1905 CDM Smith personnel left site.

*David Rojas*  
 7/6/16

Location S.E. Rockford Date Thur 7/7/16  
 Project / Client Area 4 ERH (MPE K7)  
IEPA

- 0713 CDM Smith personnel (David Rojas) onsite @ Area 4 ERH.
- WEATHER: 72°F, cloudy, wind = calm, forecast for quick moving lt rain this morn. & severe weather late in the day
- PPE: Modified Level D
- PLAN: Terra to continue installing MPEs inside building (Zone 1). K&S is scheduled to arrive onsite later today & may begin installing MPEs outside bldg (Zone 2).
- 0720 TRS personnel onsite: Jeff Riffe & Kevin Riffe (Ted Highly was onsite but left to get supplies). Terra personnel onsite: Joe Fojtik & Luke Wedwaldt.
- 0725 TRS conducted a H&S tailgate mtg w/ Terra & CDM Smith personnel.
- 0740 Terra personnel began MIRU DPT rig (W20) @ proposed location of MPE K7. TRS approved moving proposed location slightly to the SE to avoid overhead obstructions (for shroud & gauge door track).
- 0822 Obtain water level in MPE L5 = 27.33 bgs
- David Rojas* 7/7/16



Location S.E. Rockford Date Thurs 7/7/16  
 Project / Client Area 4 ERH RA (MPE K7)  
IEPA

0830 Terra began advancing SSAs (12 1/4" dia)  
 w/ toothal wing bit @ MPE K7 (modified) location

PID	DEPTH	LITHOLOGY
0.0 (pin)	0-4' bgs	Gravelly SAND, <sup>4' gnu</sup> b/k to dk gray brn, dry, no odor
0.0	4-6	SAND, <sup>4' gnu</sup> f. to dk gray brn, tr. gravel; dy. no odor
0.2	6-9	SAND f. m. gray <sup>med</sup> orig. brn, slightest sli. odor
0.1	9-12	SAND, A.A. no odor
1.5 → 2.1	12-28	SAND, f. m. gray (even throughout) H-med orange/brown; sli. to med odor, must be having damp w/ depth
146:246	28-33	SAND, A.A. except damp to wet & strong
370	33-39.5	SAND <sup>odor</sup> grayish brn, med brown, <sup>sepe fine</sup> stained, strong odor, diet

0914 Terra completed advancing SSAs to 35' bgs  
 Placing cuttings in south roll-off & removing  
 cuttings in north roll-off. Terra POH  
 w/ SSAs. After POH w/ SSAs, hole collapsed  
 below ~19' bgs.

0945 K&S Engineers Inc. (K&S) delivery personnel  
 arrived onsite to drop off K&S drill rig.  
 Central Mine Equipment Co. (CME) 850.

1020 Terra began R/H w/ HSAs w/ wooden plug in  
 tooth bit. Diameter of hole cut by HSAs ~12 1/2"

1105 After lowering HSAs to 20' bgs, Terra  
 & CDM Smith personnel left site for lunch.  
D. Rojas 7/7/16

Location S.E. Rockford Date Thurs 7/7/16  
 Project / Client Area 4 ERH RA (MPE K7)  
IEPA

1125 David Rojas returned to site. Upon return  
 found site gate to be locked and TRS personnel  
 offsite. K&S personnel: Eric DeWitt &  
 Carlos Santana, are onsite waiting on  
 TRS to unlock gate.

1150 TRS personnel Jeff Riffe & Kevin Riffe  
 returned to site, conducted H & S meeting  
 w/ K&S personnel, and secured roll off  
 covers in preparation for inclement weather.  
 Hight rain is falling & radar indicates  
 impending stormfront moving in.

1205 Terra personnel returned to site.

1215 K&S personnel are surveying (inventory)  
 equipment & Terra personnel are resuming  
 advancement of HSAs @ MPE K7 loc.  
 Charging HSAs w/ <sup>20 gal</sup> water after reaching 25' bgs  
 and between each 5' joint connection.

1305 Terra has completed advancing the HSAs  
 to 39.5' bgs and is keeping HSAs charged  
 w/ water to ~20' bgs until TRS is ready  
 to start lowering 4" black iron pipe  
 in HSAs.

1312 TRS & Terra personnel began lowering  
 4" black iron pipe in HSAs. Some construction  
 on MPE L4 & L5 (see fig pg 18) - D. Rojas 7/7/16



Location S.E. Rockford Date Thur 7/7/16  
 Project / Client Area 4 ERH RA (DPT - MPE K7)  
 IEPA (K&S - MPE K6)

1350 TRS & Terra completed lowering 4" black iron pipe in H&SAs @ MPE K7 K&S MIRU CME rig @ MPE K6 location.

1355 Terra began mixing Graphite/Shot 3/1 mixer, pouring in H&SAs & POH, w/ H&SAs keeping mix level at least 1' inside H&SAs.

1430 K&S began advancing 12 1/4" dia H&SAs w/ center plug on 3" AW rods @ MPE K6 location (~6" south of staked location). After 5 bgs POH 1/15, install

DEPTH (ft bgs)	PID (ppm)	LITHOLOGY
0-0.5		wooden plug in H&S & re-drill to 5' & continue advance H&S
0.5'-5	0.0	SAND - backfill
5-6	0.0	LIMEROCK GRAVEL - backfill
6-11	0.1-0.3	SAND, med, Fgm, dry, no odor
11-24.5	4.1-6.2	SAND, med, org bn, grading to med gray bn, sli moist, stained (increase w/ depth) mod odor

15-20	73.93	SAND, med gray bn, F-gm, sli moist, med to strong odor, stained
20-24.5	171	SAND, A.P. except strong odor & staining

(continued on pg 46)  
 DRR 7/18/16

*David Pagan*  
 7/7/16

Location S.E. Rockford Date Thur 7/7/16  
 Project / Client Area 4 ERH RA (DPT - MPE K7)  
 IEPA (K&S - MPE K6)

1445 K&S personnel ceased drilling after advancing H&SAs to 5' bgs and walked outside Fenced area to talk w/ other personnel that are parked on Marshall road. TRS personnel indicated they believe the personnel on the road are Union personnel (same union as K&S) and may be discussing the fact that Terra (non-union) is working @ the site. I noticed the "union" personnel take pictures of the site & the Terra support vehicle.

1515 K&S personnel confronted TRS personnel and notified them that the Union people are upset that Terra is on site.

1540 K&S personnel resumed drilling @ MPE K6 location. Putting cuttings in roll off.

1545 Terra completed POH w/ H&SAs. Required 9.5 3/1 mixer of Graphite/Shot mix to bring top of mix to 2' bgs. TRS tagged WL @ 27.05 bgs (4" pipe stick up = 0.9 bgs)

1610 K&S ceased drlg @ 24.5' bgs and secured rig for the night and left the site.

1633 David left site while TRS & Terra are securing equipment & site for the night. - DRR 7/7/16 -



Location S.E. Rockford Date Fri 7/8/16  
 Project / Client Area 4 ERH RA Terra - MPE L6  
K+S - MPE K6  
IEPA

0710 CDM Smith personnel (David Rojas) onsite @ Area 4 ERH.

WEATHER: 73°F clear, wind = calm

PPE: Modified Level D

PLAN: Tena & K+S to continue installing MPE's under direction by TRS.

0715 TRS conducted H&S tailgate mtg with all personnel onsite:

TRS - Jeff Riffe, Kevin Riffe, & Ted Nighley

Terra - Joe Fojtik & Luke Wedwaldt

K+S - Eric Deloit & Carlos Santana

Note: There are 5 vehicles parked on Marshall Road (union personnel). 2 people approached me and I told them I was an employee w/CDM Smith and not at liberty to discuss the site activities - only an oversite person.

0725 Tena & K+S personnel are securing rigs and organizing supplies. TRS is attempting to move ceiling hoist that is situated above proposed MPE L6.

0730 Chris Thomas (TRS) arrived onsite

0735 K+S personnel ceased activity and left site. Union personnel are walking along roadway w/picket signs.

Location S.E. Rockford Date Fri 7/8/16  
 Project / Client Area 4 ERH RA Terra - MPE L6  
IEPA

0740 Tena MIRU DPT rig @ proposed loc. of MPE L6, removed cone concrete and prepared to begin advancing SSAs. Note: TRS was unable to move hoist but Tena stated they should be able to drill around it.

(# bgs)	DEPTH	PID (ppm)	LITHOLOGY
0-3	0.1		Gravelly silty SAND, black, F.guy, sh. color, silty
3-9	0.1		SILTY SAND, <sup>blk</sup> gungy, F.guy, sh. color, sh. moist
9-15	6.8		SAND, gungy, F.guy, mod. to strong odor, <sup>strong</sup> moist-wet
15-25	213-728		SAND, gungy, F.guy, strong odor, <sup>strong</sup> moist-wet
25-30	994-121		SAND, A.A. wet w/strong odor & heavily stained
30-39.5	84-71		SAND, gungy, F-c gungy, strong odor, stained wet, coarsening with depth & less staining with depth

0820 Tena ceased advancing SSAs @ 30' bgs and began POH w/SSAs. Note: PID readings up to 3.3 ppm in work area. After POH w/SSAs, hole collapsed to be 21' bgs.

0957 Tena began advancing H&SAs on <sup>location of this plug</sup> pilot hole advanced w/SSAs @ proposed loc. of MPE L6. After reaching 25 bgs w/H&SAs, Tena began changing the H&SAs w/ <sup>top 20 bgs</sup> water to avoid hole then fill w/sediment or flowing sands when the wooden plug is being placed.



Location S.E. Rockford Date Fri 7/8/16  
 Project / Client Area 4 ERH RA (Terra-MPE L6)  
IEPA

1115 Terra has completed advancing HSAs & 39.5' bgs and re-filled HSAs & ~20' bgs w/ water. TRS began installing 4" black iron materials inside HSAs. See construction log on p. 18

1212 TRS completed lowering 4" black iron materials in HSAs, Terra had to use percussion on pipe (with a cap temporarily secured on it) to push plug out of HSAs, then per TRS request, dumped a 50 lb bag of shot prior to dumping  $\frac{3}{4}$  mixes of Graphite/shot while POH w/ HSAs. Terra verified that at least one foot of mix compacted inside HSAs at all times during POH w/ HSAs.

1235 Chain broke while Terra was attempting to continue POH w/ HSAs after POH w/ one flight. Repaired chain and resumed POH w/ HSAs @ 1250.

1305 Chris left site. Note: Union personnel have gone.

1340 Terra completed POH w/ HSAs. Graphite/shot mix up to 2' bgs w/ 9.25  $\frac{3}{4}$  mixes. began securing <sup>equipment</sup>

1420 TRS & Terra & CDM Smith personnel left site. — D Rojas 7/8/16 —

Location S.E. Rockford Date Mon 7/11/16  
 Project / Client AREA 4 ERH RA  
IEPA

0900 CDM Smith personnel (David Rojas) drove by the Area 4 Site. There are 3 vehicles parked in the easement of Marshall St (suspect they are union personnel), but there do not appear to be any TRS, Terra, or K&S personnel onsite and the site appears to still be secured (gate closed & locked & briefly closed). David proceeded to CDM Smith trailer to pick up supplies and verify calibration of MiniRae 3000 PID meter.

Weather: Temp = 79°F Wind = 3-5 mph S  
 Sky = Clear Forecast = Temp in the low 90s (Feels like in the low 100s). Stormy weather on Tue & Wednesday possible.

0920 John Grobos (CDM Smith) arrived onsite @ the CDM Trailer

0940 David & John proceeded to site and met w/ Jeff R. Ae (TRS) who just recently arrived onsite. <sup>Jeff stated K&S not expected to be onsite today.</sup>

1005 Terra personnel arrived onsite. (Joe Fojtik & Luke Wedwaldt) and are making preparation for starting work

1030 John called Brian Conrath (IEPA) to discuss site activity to date. — D Rojas 7/11/16 —



2 30 Location S.E. Rockford Date Mon 7/11/16  
Project / Client Area 4 ERH RA (Terra - TMP-M5)  
IEPA

- 1 1050 Jeff conducted a H&S calgate mtg w/Terra & CDM Smith personnel.
- 1100 Ted Highley (TRS) arrived on site. Jeff left site to get supply.
- 1110 Terra MIRU DPT rig @ proposed loc. of Temperature Monitoring Probe (TMP)-M5 broke & removed concrete core, and began advancing 3.5" diameter rods w/ expendable pointed end cap using percussion of DPT.
- 1150 Terra has completed advancing rods to 20' bgs. Shutdown waiting on Jeff to return w/ copper caps before continuing to advance rods.
- 1205 Terra & CDM Smith personnel left site for lunch break.
- 1305 CDM Smith personnel returned to the site and Terra personnel have ~~already~~ resumed advancing rods. After each rod joint, Terra is filling rods w/water up to ~15' bgs. Terra also began mixing neat cement w/ Portland cement (1.5 94lb bags Type I Portland Cement + 10 gal water) in a 55-gal plastic drum.

Don Rojas 7/11/16

31 Location S.E. Rockford Date Mon 7/11/16  
Project / Client Area 4 ERH RA Terra - TMP-M5 & MPE-L7  
IEPA

- 1305 Terra completed advancing rods to 37.7' bgs and TRS began lowering 1.5" diameter <sup>copper</sup> pipe in rods after Terra filled the rods w/ cement grout. The copper pipe sections are 14' + 14' + 6' + 6' attached w/ soldered couplers & a copper endcap. 3' of tubing cap.
- 1345 Terra attempted to POH w/ rods using a chain, but no success. TRS cut 10.25" of tubing off of stick up so Terra could POH w/ rods <sup>sections</sup> using end cap. Terra mixed 1.5 more bags of cement and poured in ~~the~~ rods as POH.
- 1405 Terra completed POH w/ rods, filled hole w/ <sup>remaining</sup> cement up to base of concrete slab (~5" bgs).
- 1425 Terra MIRU DPT rig @ proposed location of MPE-L7 unable to rig up @ proposed location due to overhead obstructions & moving around space so moved location ~2' south (Approved by TRS).
- 1435 John Grabs left site.
- 1440 Terra began advancing SSAs @ MPE-L7.
- 1510 Terra ceased advancing SSAs @ 20' bgs and shutdown & secure site. - Rojas 7/11/16 -



32 Location S.E. Rockford Date Mon 7/11/16  
 Project / Client Area 4 ERH RA Terra-MPE L7  
IEPA

LITHOLOGY & PID READINGS FOR MPE-L7

(ft-bgs) DEPTH	PID (ppm)	LITHOLOGY
0-5	2.2	SILTY SD, dk brn, Fgm, some trigonal, <sup>tr</sup> oda
5-8	0.4	SAND, dk-m brn, Fgm, chp, no odor
8-20	0.1-0.0	SAND <sup>lt</sup> yel brn, Fgm, some m-gw <sup>w/depth</sup> dry bearing sli moist below 18' bgs, <sup>no</sup> odor
20-27	0.0	SAND, lt-m org brn, Fgm <sup>w/Some med gm</sup> sli moist becoming moist <sup>w/depth</sup> , no odor
27-30	78-176	SAND, med gray brn, F-m gm, stained, strong odor, moist to wet
30-39.5	155-168	SAND, dk greenish gray, F-m <sup>w/trace</sup> gw, strong strong odor, wet, <sup>to some</sup>

1520 David Rojas left site for the day while TRS & Terra personnel are completing securing the site. David turned off air conditioner and locked up CDM Smith trailer.

*David Rojas*  
 7/11/16

33 Location S.E. Rockford Date Tue 7/12/16  
 Project / Client Area 4 ERH RA Terra-MPE-L7  
IEPA

0710 CDM Smith personnel (David Rojas) onsite @ Area 4. TRS personnel (Jeff Riffe & Ted Highley) and Terra personnel (Joe Fojtik & Luke Wedwaldt) are already onsite.

WEATHER: Temp = 74°F Sky = Cloudy Wind = 5 mph  
 Forecast = shower & possible thunderstorms this morning, High in the mid to upper 80's.

0715 TRS conducted a H&S tailgate mtg w/ Terra & CDM Smith personnel prepared

0730 Terra resumed advancing SSAs @ MPE L7 location. See lithology & PID info on pg. 32.

0740 Terra completed advancing SSAs to 30 bgs then PCH w/ SSAs. All cuttings placed in 5 drums from 0-27' & all cutting from >27' placed in N. dumpster. Borehole collapsed up to 20.5 bgs

0815 Terra began advancing HSAs w/ wooden plug in bit @ proposed location of MPE-L7. After reaching 25 bgs, began filling HSAs w/ water up to ~20' bgs between flight connections.

0945 Terra completed advancing HSAs to 39.5 bgs and TRS <sup>Terra</sup> began lowering 4" black iron pipe inside HSAs.

1020 Completed lowering pipe in HSAs, refill HSAs w/ water up to 20' bgs, pour 150-lb bag of shot in HSAs after knocking out plug w/ percussion of electrode. X Rojas 7/12/16



Location S.E. Rockford

Date Tue 7/12/16

Project / Client Area 4 ERH RA

Terra-MPE-L7  
MPE-M6

IEPA

1030 Terra began POH w/HSAs while dumping 3/1 Graphite/Shot mixes, keeping top of mix at least 3 feet above base of HSAs.

1045 TRS is installing drip pipes in the boreholes of MPEs L4, L5, L6 & K7. Drip pipe is 4 1/2' long 1/2" copper pipe with a piece of screen material clamped on bottom. Pipe is pushed in by hand and left sticking up 6" aqs.

1150 Completed POH w/HSAs and brought top of graphite/shot mix up to 2' bgs. Total number of mixes used = 9.5

1205 All personnel left site for lunch.

1305 COX Smith personnel returned to site. TRS & Terra personnel have returned to site, MIRU DPT @ proposed loc. of MPE-M6, and began advancing SSAs.

DEPTH	PID	LITHOLOGY
0-5	13.1	SAND, blk to dark dk brn, f-gm, tr to few gravel sli odor, dry to sli moist
5-8	Not Measured	SAND, med org brn, f-gm, tr odor, dry to moist
8-25	0.2-0.6	SAND, med yel brn, f-gm, no odor, dry to sli moist
25-29	22-28	SAND, dk org brn med to strong odor, moist to wet
29-39.5	8.8-14.0	SAND, dk greenish gray, f-m gm w/tr to some coarse gravel, med strong odor wet, stained.

- R. Rose 7/12/16 -

Location S.E. Rockford

Date Tue 7/12/16

Project / Client Area 4 ERH RA

Terra-MPE-M6

IEPA

(Hole collapsed up to ~20' bgs)

1320 Terra began POH w/SSAs, then RIH w/HSAs w/wooden plug in bit. After advancing HSAs to 20' bgs, began charging the HSAs w/water filling them up to ~20' bgs after advancing each 5' flight.

1430 TRS tagged water level in MPE-L7 @ 27.0' bgs. Stick up of 4" black iron pipe = 0.3 aqs.

1435 After advancing HSAs to 35' bgs, HSAs are binding in borehole & Terra is unable to maintain rotation (also, no cuttings to surface). Work HSAs and pick up (PU) HSAs to 30' bgs, spinning soupy cuttings to surface.

1500 Terra completed advancing HSAs to 39.5' bgs charged HSAs w/water and TRS used forklift to lower sections of 4" black iron pipe inside HSAs to construct the pipe portion of MPE-M6. See fig on pg. 18.

1524 TRS completed installing black iron pipe, and Terra began POH w/HSAs and dumping 3/1 graphite/shot mixes inside HSAs (keeping top of mix at least 3' above the base of the HSAs). Both Terra & TRS personnel are making mixes.

\* Note: 50 lb of shot was dumped into HSAs before Terra began POH.

- R. Rose 7/12/16 -



Location SE Rockford Date Tues 7/12/16  
 Project / Client Area 4 ERH RA Terra - MPE-M6  
 IEPA

- 1620 Terra has completed POH w/ H&S and verified that the top of the graphite/shot mix has been brought up to 2 bgs.  
~~1635~~ A total of 10.5 graphite/shot mixes were required to bring mix up to 2 bgs. (Note: stick up & WL measured on 7/13/16)  
 1635 D. Rojas left site in route to UPS to pick up scanned files of fieldbooks while TRS & Terra secured the site and prepared to leave the site for the night. 3 Union personnel were still in ROW at the time D Rojas left the site.

*David Rojas*  
 7/12/16

Location S.E. Rockford Date Wed 7/13/16  
 Project / Client Area 4 ERH RA Terra - MPE-M5  
 IEPA

- 0710 CDM Smith personnel (David Rojas) onsite @ AREA 4. Already onsite are TRS personnel Jeff Riffe & Ted Highley and Terra Probe personnel Joe Fojtik & Luke Wedwaldt.  
 WEATHER: Temp = 71°F Wind = 3 mph S, Sky = pty cloudy. Forecast is for scattered showers & possible thunderstorms late in the day w/ high temperatures in the high 80s  
 PPE: Modified Level D  
 PLAN: Terra to advance borehole for MPE-M5, assist TRS personnel in the installation of the electrode, advance borehole for TMP-K7, & Terra install temp probe  
 0720 TRS conducted a H&S tailgate mtg w/ CDM Smith & Terra personnel  
 0730 Terra began advancing SSFs @ proposed location of MPE-M5 after breaking concrete core on pad w/ star bit.
- | DEPTH<br>ft bgs | PID<br>(ppm) | LITHOLOGY   |
|-----------------|--------------|---|
| 0-6             | 0.0          | Silty SAND, dk sky brn to blk, F-gm, few gravel, tr debris - glass & concrete rubble, bur no odor |
| 6-13            | 0.0          | SAND, dk org brn, F-gm, dry, no odor  |
| 13-19           | 0.0          | SAND, med yel brn mottled w/ dk brn, sli moist, F-gm, no odor                                     |
| 19-24           | 0.0          | SAND, lt-med yel brn, sli moist, no odor, F-gm  |
| 24-27           | 0.0          | SAND, med to dk org brn, F-gm, sli moist to moist, no odor  |
| 27-31           | 45.21        | SAND, med org brn to lt yel brn, F-m gm, moist to wet, <del>no</del> odor, streaks of staining    |
| 31-40           | 0.0          | SAND, lt-med yel brn, F-m w/ no coarse gm, wet, no odor.  |
- D. Rojas 7/13/16*



Location S.E. Rockford Date Wed 7/13/16  
 Project / Client Area 4 ERH RA Terra-MPE-M5  
 IEPA

- 0810 TRS tagged water level in MPE-M6 installed yesterday: WL = 27.48' bgs. Stick-up of 4" black iron electrode = 0.65' bgs.
- 0812 Terra completed advancing SSAs to 30' bgs @ proposed MPE-M5 location and began POH w/ SSAs. All cutting being placed in <sup>drifter</sup> ~~drifter~~.
- 0820 Terra completed POH w/ SSAs and began RIH w/ HSAs w/ wooden plug in bit. Tagged bottom of pilot hole @ ~17' bgs w/ HSAs. After advancing HSAs to 25' bgs began charging HSAs w/ water between flight connections.
- 0954 Terra completed advancing HSAs to 40' bgs and TRS personnel began lowering 4" diameter black iron pipe in HSAs using fork lift and pipe hanger connecting sections w/ couplers. Cuttings from ~27' bgs being placed in Northern pilot hole containing due to down.
- 1013 TRS completed lowering black iron pipe in HSAs and Terra dumped a 50-lb bag of steel shot in HSAs and began POH w/ HSAs while dumping  $\frac{3}{4}$  graphite shot mix in HSAs (keeping top of mix at least 3 feet inside HSAs).
- 1118 Terra completed POH w/ HSAs. Required 10.5 mixes of graphite/shot to bring top of mix to 2' bgs. — D Rojas 7/13/16 —

Location S.E. Rockford Date Wed 7/13/16  
 Project / Client Area 4 ERH RA Terra-MPE-M5  
 IEPA TMP-K7

- 1128 TRS measured WH & Stickup @ MPE-M5. Stick up = 0.45' als. WL = 27.59' bgs. TRS also pushed 4.5' long 0.5" diameter copper pipes w/ a piece of screen material clamped on bottom in boreholes for MPE M5, M6, & L7.
- 1135 CDM Smith & Terra personnel left site for lunch & Terra personnel are also picking up supplies.
- 1235 CDM Smith personnel (David Rojas) returned to site.
- 1302 Terra personnel returned to site and MIRU DPT rig @ proposed location of TMPK7 and began advancing 3.5" diameter rods w/ expendable pointed end cap using percussion of DPT. Also, filling boreholes of all <sup>seven existing</sup> MPEs w/ #4 silica sand from 2' bgs to 0.5' bgs. Generally takes 2-3 50-lb bags of sand. After reaching 20' bgs, began filling rods to ~15' bgs w/ water & mixed neat cement.
- 1450 Terra completed advancing 3.5" rods to 37.9' bgs, TRS lowered 1.5" dia. copper pipe in sections from bottom sections are: 14' + 8' + 6' + 2.5' + 6' + 3.5'. Cap on bottom of couplers soldered. — D Rojas 7/13/16 —



Location S.E. Rockford Date Wed 7/13/16  
 Project / Client Area 4 ERH RA Terra: TMP-K7  
IEPA

1510 TRS completed ~~last~~ soldering and lowering copper pipe inside rods and Terra confirmed that they could POH w/ rods. Terra filled rods w/ neat cement and began POH w/ rods while keeping downhole rods full of cement.

1530 After Terra removed first rod, TRS attempted to adjust height of TMP, but unable to overcome setting growth. TRS cut off copper pipe @ ~0.4 ggs.

1552 Terra completed POH w/ rods and began securing equipment along w/ TRS personnel in preparation for leaving the site for the night.

\* Required 2 94 lb bags of Type I Portland cement.

1615 CDM Smith personnel left site for the night.

*DR*  
 7/13/16

Location S.E. Rockford Date Thur 7/14/16  
 Project / Client Area 4 ERH RA Terra VP-L7  
IEPA

0710 CDM Smith personnel (David Rojas) onsite @ AREA 4. Already onsite are TRS personnel Jeff Rife & Ted Hightley and Terra personnel Joe Fajtik & Luke Walwaldt.

WEATHER: 69°F Wind = 3 mph W Sky = clear  
 Forecast to get to the mid 80s.

TPE: Modified Level D

Plan: Terra to complete work in Zone 1 and advance soil probe @ location near gate for CDM to collect soil sample. Then Terra will demobilize from site.

0715 TRS conducted H&S tailgate mtg w/ CDM Smith & Terra personnel.

0735 Terra MIRU DPT rig @ <sup>modified</sup> proposed loc of Vapor Monitoring ~~Pipe~~ <sup>Piezometer</sup> VP-L7. Moved location ~2.5' south due to a wall.

0745 Terra began advancing 4" diameter SBAs

DEPTH	PO	LITHOLOGY
0-3	0.0	Gravelly SAND, dk org brn mottled w/ lt mod org brn, mod silty, gravel inc slag, f-grn, dry no odor
3-6	0.0	silty SAND, dusty brn to black, f-grn, sli moist no odor, to gravel
6-12	0.0	SAND, m-dk org brn, f-grn, sli moist, no odor to fine gravel
12-15	0.0	SAND, lt yel brn mottled w/ mod brn, f-grn, dry no odor
15-18.5	0.0	SAND, lt yel brn, f-grn, dry, no odor

*DR* 7/14/16



Location S.E. Rockford

Date Thur 7/12/16

Project / Client Area 4 ERH RA Terra VP<sub>3</sub> L7 & M6  
A4-Plot-160714  
IEPA

0800 Terra completed advancing 4" SSAs @ revised location of VP-L7 & 18.5 bgs. POH w/ SSAs and hole stayed open to 18.5' bgs.

0810 Terra personnel began loading equipment in supply trailers waiting for TRS to receive delivery of stainless steel supplies for vapor piezometers.

0910 Terra MIRU DPT @ proposed location of VP-M6 and began advancing 4" dia SSAs

DEPTH	PID	LITHOLOGY
0-2	2.2	Gravelly SAND, lt gray mottled w/ dk bn & blk, dry, F-c gw, silty odor
2-4	3.8	Gravelly SAND, m-dk gray, F-c gw & gravel w/ f-m sized, dk, silty odor
4-7	5.8	Silty SAND, blk, F-c gw w/ few m-gw silty moist, mod odor
7-10	6.6	Silty SAND, dusky bn to blk, F-gw silty moist, mod-strong odor
10-18.5	3.1	SAND, mod yel bn mottled w/ gray bn F-gw, streaks of slaty in w depth, moist becoming wet w depth, mod-strong odor

0930 Terra completed advancing SSAs @ proposed location of VP-M6, left SSAs in borehole and MIRU DPT at proposed location of soil boring A4-Plot-160714 adjacent to eastern gate post where TRS noted odorous soil during installation of fence. ————— Drayer 7/14/16

Location S.E. Rockford

Date Thur 7/14/16

Project / Client Area 4 ERH RA Terra A4-Plot-160714  
VP<sub>3</sub> M6 & L7  
IEPA

Lithology of Soil boring A4-Plot-160714		
DEPTH	PID	LITHOLOGY
0-0.2	—	Asphalt
0.2-1.3	6.8	Gravelly SAND, lt gray mottled w/ dk bn & blk, dry, F-c gw, mod to strong odor
1.3-3.5	2.8-0.4	SAND, blk, gray to dusky bn, F-c gw, silty, dry to silty moist, mod to strong odor
3.5-4.5	0.1	SAND, dk gray bn, F-gw, silty, dry to silty moist
4.5-5.0	0.0	SAND, mod gray bn, F-gw, silty, dry to silty moist, to gravel

1000 Terra completed advancing 2 soil probes to 5' bgs. David called John Grabs (CDM Smith) to discuss findings. John stated based on lack of PID readings no sample would be submitted to lab for analysis. \* David filled 16 oz jar w/ soil material from 0.2-3.5' bgs. Terra has loaded all equipment except what is needed to install VP's so they MIRU DPT @ VP-M6 and started logging stand by.

\* NOTE: In the afternoon, John decided to have me send a 2 oz jar of sample to STAT Lab to be analyzed for VOCs.

1120 TRS received shipment of stainless steel piezometer supplies and Terra POH w/ 4" SSAs @ VP-M6 location and hole stayed open to 18.5' bgs

1140 TRS began assembling VP materials for VP-M6  
2.5' of 1.5" dia V-wrap (20 slot) sam  
5.7' of 1.5" dia SS rib  
6.2' of 1.5" dia Sch 80 CPVC — 7/14/16 Drayer



Location S.E. Rockford Date Thurs 7/14/16  
 Project / Client Area 4 ERH RA Terra - VP-L7  
IEPA

- 1145 Terra filled borehole for VP-L7 From 18.5 to 13' bgs w/ #4 silica sd, TRS lowered piezometer materials in borehole (screen 10.5-13.0), Terra poured #4 sand in annulus up to 8' bgs, & thick neat cement from 8' bgs to surface
- 1155 Terra & TRS repeated the installation process @ VP-M6.
- 1235 Terra is completing the securing of their equipment & preparing to leave the site with their equipment.
- 1255 Terra personnel & equipment left the site. Union personnel are still in ROW.
- 1310 David left the site in route to the hotel while TRS personnel are completing site securing prior to leaving for lunch. Although TRS personnel will be returning to the site this afternoon and tomorrow morning, all they plan on doing is site securing and supply inventory & prep so David & David will not return until Monday the 18th.

Location S.E. Rockford Date Mon 7/18/16  
 Project / Client Area 4 ERA RA Wolf Bros. - Tree trimming  
IEPA K+S - MPE-K6

- 0910 CDM Smith personnel (David Rojas) onsite @ Area 4. Already onsite is Jeff Riffe (TRS)
- WEATHER: Temp = 77°F Sk = Cloudy  
 Wind = 1-3 mph SW
- PPE: Modified Level D
- PLAN: K+S Engineers Inc. (K+S) will return to the site & resume installation of MPEs.
- 0930 John Grabs (CDM Smith) onsite
- 1040 John left site.
- 1043 Wolf Bros Tree Service (WBTS) arrived onsite w/ tree trimming equipment to trim the tree w/ limbs <sup>that will be</sup> in the way of the mast of the drill rig @ MPEs H6 & J6 & GWP-H6. (Dan Wolf & Dan Wolf Jr)
- 1045 Jeff conducted a K+S Tailgate mtg w/ WBTS & CDM Smith personnel then WBTS began trimming the tree.
- 1100 John returned to the site then left @ 1130.
- 1130 WBTS completed trimming the elm tree & K+S personnel arrived onsite (Eric Deibalt & Carlos Santana) and began preparing to resume drilling 12" diameter hollow stem augers (HSAs) at MPE-K6.



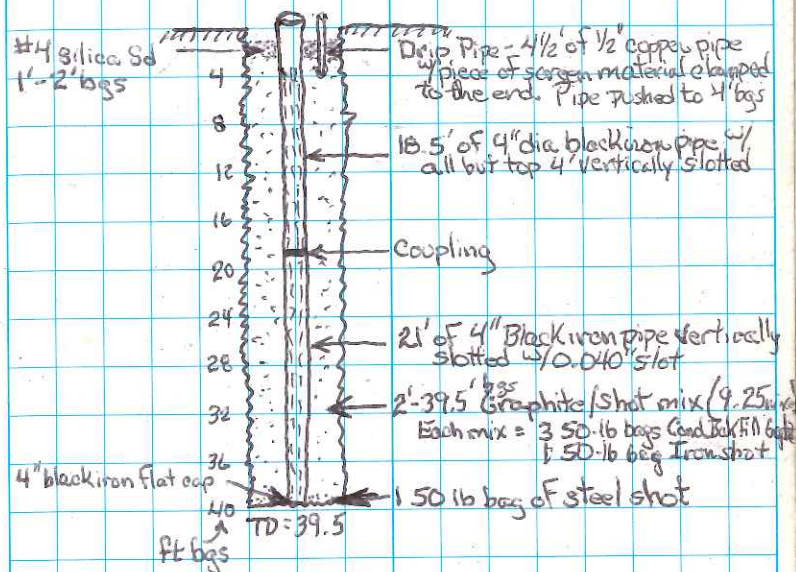
Location S.E. Rockford Date Mon 7/18/16  
 Project / Client Area 4 ERH RA K&S - MPE K6  
 IEPA

- 1145 TRS conducted a H&S tailgate meeting w/ K&S personnel.
- 1205 K&S <sup>changed H&S w/ water</sup> resumed advancing H&S @ proposed MPE-K6 location (see lithology & PID readings of material from surf to 24.5 bgs on pg 24)
- | DEPTH (ft bgs) | PID (ppm) | LITHOLOGY   |
|----------------|-----------|---|
| 24.5-33        | 145-178   | SAND, yel brn to mod grayish brn. Firm w/ few m-gum, moist becoming wet w/ depth, staining  |
| 33-39.5        | 205-485   | SAND, mod grayish gray, Firm gummy for c-gum wet, staining. Strong odor. Increasing amount of c-gum w/ depth & increasing PID number w/ depth |

- 1240 K&S completed advancing the 12.25" dia H&S to 39.5 bgs. Highest PID reading in work zone = 20.1 ppm
- K&S & TRS personnel work together to lower 4" black iron electrode in 2 pieces - bottom = 21' long entire length <sup>vertically</sup> w/ 40 slot top = 18.5' long w/ all but top 4' slotted w/ 40 slot then dump 1 50-lb bag of shot. Followed by 1 3/1 mix of graphite/shot mix prior to beginning to POH w/ H&S while adding more 3/1 mixes of graphite/shot.
- 1330 Brad Morris (TRS) arrived onsite.
- 1430 K&S completed POH w/ H&S and have brought graphite/shot mix up to 2' bgs w/ 9.25 mixes. — Drops 7/18/16 —

Location S.E. Rockford Date Mon 7/18/16  
 Project / Client Area 4 ERH RA K&S - MPE K5  
 IEPA

## CONSTRUCTION OF MPE-K6 (ZONE 2)



- 1435 TRS pushed Drip pipe in annulus to 4' bgs
- 1440 K&S moved rig w/ derrick up to proposed location of MPE-K5.
- 1500 K&S began advancing 12.25" dia H&S w/ center plug on 3" API rods inside H&S @ proposed loc. of MPE-K5 (see Lithology & PID readings on pg 48). After dls to 5' bgs POH w/ H&S & CP, install wooden plug in H&S and resume dls. Material for 0-9' bgs placed in south roll off, rest placed in north roll off.



Location S.E. ROCKFORD Date Mon 7/18/16  
 Project / Client AREA 4 ERH RA K&S-MPE-K5  
IEPA

Lithology & PID readings @ MPE-K5		
DEPTH (ft bgs)	PID ppm	LITHOLOGY
0-0.5	0.0	SAND - backfill
0.5-4.0	20.2	LIMEROCK GRAVEL - backfill, silty odor
4.0-6.0	0.7	SAND, mod brn F-gw, no odor, dry, some gravel, but may be stuff from above
6.0-9.0	0.1	SAND, dk brn, F-gw, dry, no odor
9.0-13	68.8-110	SAND, dk gray, F-gw, slt moist, stained, strong odor
13'-18'	85-98	SAND, dk greenish gray, F-gw, slt moist stained, strong odor
18'-22'	238-262	SAND, mod greenish gray, F-gw, slt moist stained, strong odor
22'-25'	245-234	SAND, lt-mod gray, F-gw, dry to slt moist some staining, strong odor
25'-35'	180-71*	SAND, mod gray, F-gw, w/lt F-gw c-gw moist becoming wet w/depth, mod odor & stain
35-39.5	121-101	SAND, mod gray, F-gw, w/some c-gw wet, mod - strong odor

\* Lower reading may have been due to influence  
 of water introduced from charging HSA

1600 K&S personnel have advanced 12.25'-dia  
 HSAs to 25' and began securing site  
 in preparation for shutting down for  
 night (SDFN).

1630 K&S and CDM Smith personnel left  
 site while TRS personnel secure bldg  
 & support bldg.

*D. Rajan*  
 7/18/16

Location S.E. ROCKFORD Date Tue 7/19/16  
 Project / Client Area 4 ERH RA K&S-MPE-K5  
IEPA

0700 CDM Smith personnel (David Rajan) onsite  
 @ Area 4.

Weather: Temp = 69°F Wind = 1-3 mph S Sky = clear  
 Forecast is for temp. to get into high 80s

PPE: Modified Level D

Plan: K&S to continue installing MPEs in  
 Zone 2.

0705: K&S & TRS personnel onsite.  
 Brad Morris & Jeff Rife  
 Eric DeWitt & Carlos Santana

0707: TRS conducted a H&S Tailgate mtg w/CDM Smith  
 & K&S personnel.

0720 K&S personnel resumed advancing HSA  
 @ proposed MPE-K5. See lithology & PID readings  
 on pg 48. Charging HSAs prior to making  
 connections.

0745 K&S completed advancing HSAs to 39.5 bgs,  
 charged HSAs, and TRS personnel brought  
 4" black iron piping to loc. w/ Forklift and  
 K&S personnel lowered it into HSAs (same  
 procedure of black iron & graphite/shot  
 mixture as used @ MPE-K6 yesterday  
 - See pgs 46 & 47 for details & illustrations)

0807 CDM Smith collected Wh in MPE-K6:  
 Top of casing (TOC) = 0.66' bgs Wh = 27.71' bgs

*D. Rajan* 7/19/16



Location S.E. RockfordProject / Client Area 4 ERH RAIEPADate Tue 7/19/16K&S: MPE-K5  
MPE-K4

0815 K&S began pulling out of hole (POH) w/HSAs after using <sup>standard penetration test</sup> split spoon technology (SPT) hammer to push electrode to push wooden plug out of HSAs. Stripped threads hammer cap <sup>Temp installed on MPE</sup>

0930 K&S completed POH w/HSAs. Required 9.75 mixes of graphite/shot mix to bring mix to 2' bgs in annulus. K&S moved drill rig to proposed location of MPE-K4 and prepared to advance HSA w/century plug <sup>(CP)</sup> to 5' for pilot hole while Brad put driptube #4 <sup>in K5</sup>

0955 K&S POH w/HSAs & century plug and began advancing HSAs w/wooden plug in bit.

DEPTH (ft bgs)	PID (ppm)	LITHOLOGY
0-0.5	0.0	SAND - backfill, no odor
0.5-6.0	14.5	LIMEROCK GRAVEL - backfill, sli odor
6.0-8.0	49.5	SAND, med to dk gray, F-gw, sli med odor dry to sli moist
8.0-12	68-28	SAND, dk gray, F-gw, stained, med odor, sli moist to moist, sli silty
12-17	31-56	SAND, dk gray, F-gw, spotty staining, med odor, sli moist
17-27	88-126	SAND, <del>med to</del> ft-med yellow, F-gw, dry to sli moist, med to strong odor, becoming wet to 25
27-31	113-76	SAND, med gray, F-gw, sli med odor, wet, spotty staining, med to strong odor
31-35	81-89	SAND, AA except F-m gw w/Fe-c-gw, some staining observed, med-strong odor, wet
35-39.5	71-76	SAND, med to dk gray, F-m gw w/some coarse some staining, med-strong odor, wet. <sup>grading to midday</sup>

1032 Tim Drexler (EPA) & Crystal Nickel-Reuss (CH<sub>2</sub>M Hill) stopped by site to see if EPA can store 5 IDW drums at the site. Spoke w/Brad.

7/19/16

Location S.E. RockfordProject / Client Area 4 ERH RAIEPADate Tue 7/19/16K&S: MPE-K4  
MPE-J3

1102 K&S completed advancing HSAs to 39.5' bgs and TRS personnel assisted K&S personnel lower 4" black non pipe in HSAs. Dumped 1 50-lb bag of shot and one 3/1 graphite/shot mix inside HSAs, pushed on pipe w/drill head to push out wooden plug, added one more 3/1 graphite/shot mix then begin POH w/HSAs while adding 3/1 graphite/shot mixes, keeping <sup>at least 3' of</sup> mix on HSAs.

1220 K&S completed POH w/HSAs. It required 9.75 mixes of graphite/shot to bring mix up to 2' bgs. TRS installed driptube #4 <sup>from 2' bgs</sup>

1230 All personnel left site for lunch

1310 David returned to site.

1325 TRS & K&S personnel returned to site. K&S moved rig to proposed location of MPE-J3, advanced HSA w/CP to 5' bgs, POH w/drill string (DS), RHT w/HSAs w/wooden plug in bit. See lithology & PID readings on pg 52

1412 David tagged WH in MPE-K4:

Stickup = 1.05' ags WH = 27.65' bgs

1500 K&S ceased advancing HSAs @ 22' bgs @ ~~AREA~~ proposed MPE-J3 location because drill rig engine was overheating.

7/19/16



Location S.E. Rockford Date Tue 7/19/16  
 Project / Client Area 4 ERH RA K&S: MPE-J3  
IEPA

# LITHOLOGY & PID READINGS @ MPE-J3

DEPTH (ft bgs)	PID (ppm)	LITHOLOGY
0-0.5	13.1	SAND & GRAVEL, yel brn f-m grw, sli odor, dry
0.5-1	28.7	A.A. except dk yel brn, sli - mod odor, dry
1-3	44	Silty SAND, blk, f-grw w/ few med grw dry few to some gravel loc. w/ depth, sli - mod odor
3-6	6.8-10.1	Clayey SAND, blk, grading to dk dusky brn mod plasticity, dry to sli moist, sli odor
6-9	7.4-5.6	Silty SAND, med coarse, f-grw, mottled w/ dk brn, dry, sli odor
9-16	4.5-1.8	SAND, yel brn mottled w/ dk brn, f-grw, dry, mod odor
16-24.5	1.1-2.6	SAND, lt yel brn, f-grw, dry, no odor
24.5-33	0.3-0.7	SAND, lt - med yel org brn, f-grw w/ tr. few m-grw moist becoming wet below 27 bgs, no odor
33-39.5	7.8-68.8	SAND, med grw, brn, f-m grw, sli - mod odor Wet, spotty staining becoming more prevalent w/ depth, tr - few b-grw w/ depth.

- 1520 K&S personnel spoke w/ their office <sup>Highland, TN</sup> & have gotten their request to have a truck-mounted drill rig brought to the site to exchange for the existing rig (since the tracks are also tearing up the asphalt parking lot). The new rig will be delivered either tonight or tomorrow morning first thing. Will likely not be bringing the smaller augers for the TMTs, GMP, & UPS.
- 1535 K&S and TRS personnel are securing site after K&S drilled down to 24.5 bgs and SDFN.
- 1545 David left the site for the night. <sup>7/19/16</sup>

Location S.E. Rockford Date Wed 7/20/16  
 Project / Client Area 4 ERH RA  
IEPA

0700 CDM Smith personnel (David Rojas) onsite @ Area 4. Also arriving onsite are TRS personnel Jeff Riffe & Brad Morris.

Weather: Temp = 70°F Sky = Clear Wind = Calm  
 Forecast for slight chance of showers & temperatures in the mid to upper 80s

PPE: Modified Level D

Plan: K&S is supposed to be getting a truck-mounted rig delivered to the site to replace the truck-mounted rig and they will continue to install MPEs in Zone 2.

0710 Jeff informed David that K&S personnel had to go pick up rig this morning and will not be onsite w/ it until 9:00 to 9:30. TRS personnel will stay onsite and perform site maintenance while David will calibrate back-up PID instrument and return to hotel.

0900 CDM Smith personnel (David Rojas) returned to Area 4.

1015 K&S personnel (Eric DeWitt & Carlos Sontana) arrived onsite w/ a ~~Ditch~~ Ditcher 120 truck-mounted drill rig.

1025 TRS conducted a K&S Tailgate mtg. w/ CDM Smith & K&S personnel. <sup>7/20/16</sup>



Location S.E. Rockford  
 Project / Client Area 4 ERH RA  
IEPA

Date Wed 7/20/16  
 K&S: MPE-J3  
MPE-K3

- 1030 K&S personnel rigged down the CME-850, moved it to staging area and moved in & rigged up the D-120 @ the MPE-J3 location and resumed drilling w/ the 12.25" diameter HSAs. Lithology & PID readings on pg 52. Charging HSAs w/ water between flight connectors.
- 1125 K&S completed advancing HSAs to 39.5' bgs changed HSAs w/ water, and worked w/ TRS personnel to lower 4" black iron pipe for electrode in HSAs. Same construction as "K" electrodes in Zone 2.
- 1140 K&S completed lowering black iron pipe, dumped a bag of shot and 2 mixes of 3/1 graphite/shot mix, then began PCH w/ HSAs while pouring mix in HSAs keeping mix in HSAs until completing PCH. Required 10 mixes to bring top of mix in annulus to 2' bgs.
- 1230 K&S completed PCH w/ HSAs and secured site in preparation for inclement weather.
- 1240 All personnel left site for lunch.
- 1340 All personnel returned to site. Light to moderate rain is occurring. K&S went drill.
- 1420 Rain has reduced to a drizzle so K&S agreed to MIRU @ proposed location of MPE-K3 and advance HSAs to 25' bgs.
- D Rojas 7/20/16

Location S.E. Rockford  
 Project / Client Area 4 ERH RA  
IEPA

Date Wed 7/20/16  
 K&S: MPE-K3

- 1430 K&S MIRU D-120 drill rig @ proposed loc. of MPE-K3, dld from surf - 5' bgs w/ 12.25" dia HSAs w/ center plug on AW side, PCH w/ DS, put wooden plug in bit, resume dld.
- | DEPTH (ft bgs) | PID (ppm) | LITHOLOGY  |
|----------------|-----------|--|
| 0-0.5          | 0.0       | Gravelly SAND, f-m grn, dry, no odor<br>gravel is f-m sized limnerock  |
| 0.5-3          | 0.8       | LIMNEROCK GRAVEL - backfill  |
| 3-5            | 48-90     | SILTY SAND, f-gn, sli to mod clayey, blk, few to some gravel dec w/ depth, mod-stony                                 |
| 5-7            | 7.5       | SILTY SAND, mod blk brn mottled w/ dk brn, f-gn, sli odor  |
| 7-10           | 2.9       | SAND, lt-mod yel brn mottled w/ dk brn, f-gn, tr odor, dry   |
| 10-11          | 16.4      | SAND, grayish yel brn mottled w/ dk gray brn, dry, sli odor  |
| 11-24.5        | 13.3-4.1  | SAND, lt-mod yel brn, f-gn, dry, sli odor dec w/ depth   |
| 24.5-34        | 0.4       | SAND, lt-mod yel brn grading to mod brn, sli mod becoming wet below 28' to odor, f-gn becoming f-m grn w/ depth, sli |
| 34-39.5        | 0.1-0.8   | SAND, lt-mod gray brn, f-m grn w/ future sli mod odor, wet   |
- 1520 K&S ceased dld @ 24.5' bgs due to the inability to complete the installation of MPE-K3 within the 8-hour workday constraint established by K&S. So, K&S & TRS personnel secured site in preparation for SDFN.
- 1540 CDX Smith personnel left site in route to hotel to generate Daily Activity Report.
- D Rojas 7/20/16



Location S.E. Rockford

Project / Client Area 4 ERH RA  
IIEPA

Date Thur 7/21/16

K&amp;S - MPE-K3

TRS - Sampling Rolloffs

0704 CDM Smith personnel (David Rojas) onsite @ Area 4. Already onsite: K&S personnel - Carlos Santana & Eric DeWitt and TRS personnel - Jeff Riffe & Brad Morris

WEATHER CONDITIONS: Temp = 78°F Wind = calm Sky = Foggy Forecast = Clear sky and temperatures in the mid 90s **HEAT WARNING**

PPE: Modified Level D

PLAN: K&S to continue installation of MPEs in Zone 2.

0710 TRS conducted a X/S Tailgate mtg w/ CDM Smith & K&S personnel.

0714 K&S personnel charged NSAs advanced yesterday @ MPE-K3 w/ water and resumed drilling. See lithology & PID readings on pg 55.

0732 K&S completed advancing NSAs to 39.5 bgs, charged NSAs w/ water, TRS & K&S personnel lowered 4" black iron pipe in NSAs (2 sections - same as the other MPEs in Zone 2 - see construction figure on pg 47).

0750 David measured stickup & WL @ MPE-J3:  
stickup = 0.78 bgs WL = 26.94 bgs

0755 Brad is collecting soil samples from rolloffs to verify disposal options. *DRojas 7/21/16*

Location S.E. Rockford

Project / Client Area 4 ERH RA  
IIEPA

Date Thur 7/21/16

K&S = MPE-K3  
MPE-J4

0804 K&S started POH w/ HSAs after dumping one 50-lb bag of shot and two mixes of 3/1 graphite/shot mix and pushing down on the 4" black iron pipe w/ the <sup>rigs</sup> ~~drill~~ drive cap to push out the wooden plugs. Continued to add graphite/shot mix, keeping at least 5' of mix inside NSAs until POH w/ HSAs.

0904 K&S completed POH w/ HSAs @ proposed MPE-K3 loc. Required 10 mixes of 3/1 graphite/shot mix to bring mix to 2 bgs. Moved rig w/ tower up to proposed loc. of MPE-J4, advanced NSA w/ center bit to 5' bgs, then POH w/ NSA-center bit, put wooden plug in bit and advanced to 39.5 bgs

DEPTH (ft bgs)	PID (ppm)	LITHOLOGY
0-0.5	0.0	GRAVELY SAND, f-m med, <sup>it med</sup> vel brn, gravel in limestone, <sup>drill</sup> no odor
0.5-4.5	0.0	GRAVELY SAND, f-m med, dk brn gray, grading to dk brn, <sup>drill</sup> no odor
4.5-6	341-713	Silty Sand, blk to dk dusky brn, f-m med, <sup>drill</sup> no odor, silty to sli moist, sli to med color, stained
6-8	437	Silty Sand, bluish blk, f-m med, <sup>drill</sup> no odor, silty, stained, mod odor, sli moist, sli moist
8-12	53-98	Silty SAND, dk gray, f-m med, <sup>drill</sup> no odor, silty, stained, mod to strong odor
12-18	210-256	SAND, med to dk gray, f-m med, <sup>drill</sup> no odor, sli moist, stained, strong odor
18-27	248	SAND, lt med gray, f-m med, <sup>drill</sup> no odor, strong odor, getting lighter in color <sup>drill</sup> w/ brown

cont. on pg 58

DRojas 7/21/16



Location S.E. Rockford Date Thurs 7/21/16  
 Project / Client Area 4 ERH RA K&S: MPE-J4  
IEPA

LITHOLOGY & PID READINGS FROM MPE-J4			
DEPTH (ft bgs)	PID (ppm)	LITHOLOGY	(Cont From pg 57)
27-32	278-231	SAND, med grey, mottled w/ dk grey, F-gm, moist becom. wet w/ depth, strong odor, stain	
32-37	198-153	SAND, med to dk grey, F-m gm w/ few c-gm, wet, strong odor, stain	
37-39.5	185-105	SAND, dk grey, F-m gm w/ few to some c-gm, wet, strong odor, grading to med-dk brn grey & becoming coarser grained	
0915	Jeff left site (scheduled to return in 1 1/2 weeks)		
1045	K&S completed advancing N/SA @ MPE-J4 loc., lowered 4" diameter black iron pipe (same construction as other Zone 2 MPEs), dropped one bag of shot and two <sup>3</sup> / <sub>1</sub> graphite/shot mixes in N/SA then began POH w/ N/SA after pushing on 4" pipe w/ rig auger drive cap. Continue to dump mixes in N/SA while POH		
1108	David measured stickup & WL in MPE-K3: Stickup = 0.90' ags WL = 27.23' bgs		
1154	K&S completed POH w/ N/SA. Required 10.5 mixes of <sup>3</sup> / <sub>1</sub> graphite/shot to bring mix to 2' bgs. TRS pushed drip tube in annulus and dumped 7 <sup>3</sup> / <sub>4</sub> bags of #4 sand in annulus from 2' bgs to 1' bgs.		
1205	All personnel left site for lunch.		
1240	David returned to the site. Brad has already returned too.		
D Rojas 7/21/16			

Location S.E. Rockford Date Thurs 7/21/16  
 Project / Client Area 4 ERH RA K&S: MPE-J5  
IEPA

1310 K&S personnel returned to site and David measured stickup & WL in MPE-J4:  
 Stickup = 0.86' ags WL = 26.98' bgs  
 1330 K&S has moved to proposed loc. of MPE-J5 w/ D-120 drill rig and began drilling using same procedure as at J4

DEPTH (ft bgs)	PID (ppm)	LITHOLOGY
0-0.5	0.0	Gravelly SAND, yel brn, F-m gm, gravel w/ limestone, dry, no odor
0.5-4.5	0.0-8.1	LIMESTONE GRAVEL - backfill, tr-si odor dry
4.5-8	75-104	Gravelly SAND, dk brn, F-c gm, gravel & some c-gm w/ limestone, dry, silty mod odor
8-9	226	Silty SAND, dk brn to blk brn, F-gm, dry to silty moist, silty clayey, strong odor
9-11	314	Silty SAND, blk blk, oily, stained, strong odor, F-gm, silty moist
11-17	298-262	SAND, dk grey, F-gm, silty moist, stained, strong odor
17-22	218	SAND, med grey brn, F-gm, dry, strong odor, lighter in color w/ depth
22-24.5	156-112	SAND, blk brn to blk grey, F-gm, dry, mod to strong odor
28-32	159-181	SAND, med grey brn, F-gm, silty staining, moist to wet, mod to strong odor, getting darker w/ depth
32-35	171-112	SAND, dk grey, F-m gm w/ few c-gm, stained, strong odor, wet
35-39.5	107	SAND, med yel brn mottled w/ med dk grey brn F-m gm w/ few some c-gm (coarser w/ depth), wet, spotty staining, mod odor
1500	K&S completed advancing N/SA to 24.5' bgs @ proposed loc. of MPE-J5 and began preparing to SDFN. TRS is also securing site in preparation to SDFN	
1515	David left site for the night.	
D Rojas 7/21/16		



Location S.E. Rockford Date Fri 7/22/16  
 Project / Client Area 4 ERH RA K&S: MPE-J5  
IEPA

0710 CDM Smith personnel (David Rojas) onsite @ Area 4. Already onsite is Brad Morris (TRS) and K&S personnel: Carlos Santana & Eric DeWitt.

Weather: Sky = Cloudy, Temp = 71°F Wind calm. Heavy rain overnight (~4") but none predicted until this afternoon. However, temperatures are forecast to get into the 90s again today.

PPE: Modified Level D

Plan: Complete installation of MPE-J5 electrode and one MPE in Zone 3.

0712 TRS conducted a H&S Tailgate mtg w/ CDM Smith & K&S personnel.

0714 K&S resumed advancing HSAs @ proposed loc. of MPE-J5, adding water (charging) HSAs between connections. See lith & RD on pg 59.

0733 K&S completed advancing HSAs to 39.5' bgs and worked w/ Brad to lower 4" dia. black iron pipe in HSAs to construct electrode (same construction as the other electrodes installed this week in Zone 2 - see Fig on pg 47).

D Rojas 7/22/16

Location S.E. Rockford Date Fri 7/22/16  
 Project / Client Area 4 ERH RA K&S: MPE-J5  
IEPA MPE-H6

0745 After pushing 4" black iron pipe down 4' auger drive cap, poured 1 bag of shot followed by 2 mixes of 3/1 graphite/shot and began PODH w/ HSAs keeping at least 5 feet of mix in HSAs.

0840 K&S completed PODH w/ HSAs @ MPE-J5. Required 9.5 3/1 graphite mixes to bring mix up to 2' bgs in annulus. TRS pushed drip tube in annulus.

0852 K&S moved D-120 rig to proposed MPE-H6 and prepared to advance HSA w/ center plug to 5' bgs, PODH w/ HSA & center plug, install wooden plug in HSA bit and continue chrg. to 39.5' bgs, charging HSAs w/ water below 2.5' bgs.

DEPTH (ft bgs)	PID (ppm)	LITHOLOGY
0-0.1	—	Asphalt
0.1-0.5	0.9	Gravelly SAND, med org brn, F-C gum, dry, to odor
0.5-2.0	0.2	Silty SAND, dk brn, F-m gum w/ to c gum dry, no odor, sli clayey
2.0-3.5	0.0	Silty SAND, dk red brn grading to med red brn, dry, F-gum, no odor
3.5-5.0	0.0	SAND, med org brn, F-m gum w/ few cgm dry, no odor, sli silty
5.0-16	0.0-0.4	SAND, med yel brn, F-gum, dry, no odor becoming mottled w/ med grey brn w/ depth
16-27	0.7-3.1	SAND, lt to med yel org brn, F-gum, dry, no odor
27-31	4.8-28	SAND, med grey org brn, F-gum, moist to wet, sli to med odor, spotty staining
31-36	39-59	SAND, org yel grey brn, F-m gum w/ coarse, cor, w/ depth med-strong odor, wet
36-39.5	86-218	SAND, med grey grey, F-m w/ few to some c-gum, stained, strong odor, wet

D Rojas 7/22/16



Location S.E. Rockford  
 Project / Client Area 4 ERH RA  
IEPA

Date Fri 7/22/16  
 K&S: MPE-H6

1010 David collected stickup & WL @ MPE-J5:  
 stickup = 1.06' bgs WL = 27.08' bgs

1025 K&S completed advancing HSA's to 39.5 bgs,  
 TRS & K&S personnel lowered 4" dia. blk iron  
 pipe in HSA's (same <sup>pipe</sup> construction as MPE's  
 in Zone 2), dumped one bag of shot  
 and 2 mixes of 3/1 graphite/shot mix,  
 pushed plug out of HSA by pushing  
 down on 4" pipe w/ auger drive cap,  
 then POH w/ HSA's while dumping  
 3/1 graphite/shot mix to 23' bgs then  
 #4 silica sand from 23' bgs to  
 1' bgs (keeping backfill material  
 at least 4' inside HSA's until reaching  
 prescribed level).

1127 K&S completed POH w/ HSA's as Brad  
 installed a 1/2" copper pipe to 4' bgs  
 w/ screen clamped on bottom (Drip Tube)  
 w/ ~6" ags. Required 29.5 50-lb bags  
 of #4 silica sand to bring sandpack to  
 1' bgs.

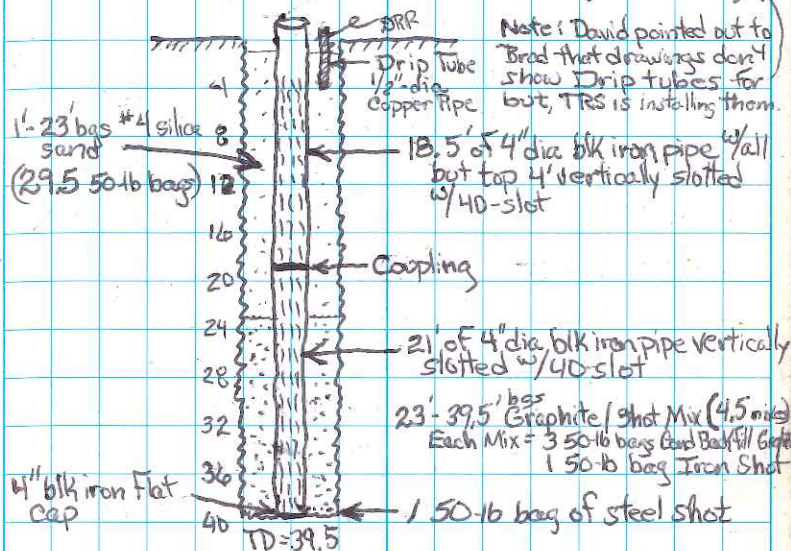
1140 David measured stick up & WL in MPE-H6  
 stick up = 0.57' ags WL = 27.35' bgs

2 Rows 7/22/16

Location S.E. Rockford  
 Project / Client Area 4 ERH RA  
IEPA

Date Fri 7/22/16  
 K&S: MPE-H6

## CONSTRUCTION OF MPE-H6 (ZONE 3)



1155 K&S and TRS personnel are securing  
 site in preparation for shutting  
 down for the weekend. Scheduled  
 to resume activities @ 09:00 on Monday

1205 David left site in route to hotel  
 to check out. Will return to the  
 site CDM Smith trailer to leave field book  
 and supplies for John Crabe who  
 is scheduled to be the site rep.  
 for CDM Smith. — 2 Rows 7/22/16



Location SE Rockford Date Mon. 7/25/16  
 Project / Client Area 4 EPH RAO  
Illinois EPA

0900 John Grobs, COM Smith,  
 at Area 4 Trailer.

weather: Sunny, 80°F, calm.  
 Forecast high 86°F.

PPE: mod. Level D

Plan: Remedial Action Oversight  
 (RAO) of electrode/probe  
 installation at Area 4.

10:00 Over at Area 4 getting stuff  
 ready. K+S just started  
 drilling on TG.

Already on site are Brad  
 Morris (TRS), Erik Dewitt  
 & Carlos Santana, with  
 K+S Drilling.

Just heard from Brad  
 Morris that waste charact.  
 sample collected last week,  
 and shipped Thurs. for Fri.  
 delivery, just arrived at  
 lab this morning with an  
 elevated temperature.

We'll likely need to collect  
 another sample.

*[Signature]*  
 7/25/16

Location SE Rockford Date Mon 7/25/16  
 Project / Client Area 4 EPH RAO  
Illinois EPA

10:20 Head over to see where  
 drilling is at the moment.

10:23 Down to 5 ft. w/ center  
 plug. Just switched to  
 knock out plug and going  
 back down. Material is  
 sitting out on log. May  
 been sitting out for a little  
 bit so it is completely  
 dry.

Depth	PIID	Description
0-1.5	—	Asphalt & gravel fill.
1.5-2.0	—	Fine SAND, tan, dry.
2.0-2.5	—	med. SAND, tan, dry.
2.5-3.0	—	med SAND & silt, gray, dry.
3.0-4.5	—	Fn. SAND, trace silt, med. yellow brown dry.
4.5-5.0	—	med. SAND, dry.

*[Signature]*  
 7/25/16



Location SE Rockford Date 7/25/16  
 Project / Client Area 4 ERH RAO  
IEPA

Depth PIV

JG

0-5' — Asphalt, gravel fill  
 5' NAB H. yellowish brown  
 Fm-med SAA & some  
 SILT. Dns. loose, no  
 18' NAB ~~General~~ SAA odor  
 Gradual slight variations in  
 color & grain size, but  
 generally the same.

24' NAB

26'  $\phi$ .3 wet, becoming more  
 frag.

~~28' 27.7~~

~~30'~~  
 37' 289 Pulled from auger  
 flight so difficult to  
 know where it is  
 actually from.

JG  
7/25/16

Location SE Rockford Date 7/25/16  
 Project / Client Area 4 ERH RAO  
IEPA

10:45 Adding another flight. Sitting  
 @ 15 bps.

Brad is moving some pallets  
 around with forklift.  
 He had been prepping  
 electrode pipe carrier w/  
 conductive paste.

10:52 Another flight sitting at  
 70 bps.

11:01 Down to 24 bps. Putting  
 water in augers.

11:07 Depart site to help Bodine  
 w/ dead battery in vehicle  
 Sitting at 26 bps. Just  
 started getting wet and  
 odor started.

11:27  
 11:22

Charging augers w/ water  
 sitting at 30 bps.

More discussion on work  
 week. Appears that it'll  
 just be a 40-hr week  
 and daily number of hours  
 is flexible.

JG  
7/25/16



Location S.E. Rockford Date mon 7/25/16  
 Project / Client Area 4 EPA RAO  
IEPA

- 11:42 Starting to install electrode pipe.  
 Brad applying more conductive paste to threads.  
 Construction of this electrode will be the same as MPE-HG and all future electrodes will be, too, unless something unusual is observed.
- see p. 63
- 12:55 Getting ready to pull last flight of auger.  
 12:57 Done at J6. Picking up garbage & what not.  
 Take lunch break.
- 13:52 Back at Area 4. Drillers have not returned yet.
- 14:09 Drillers return. Move rig over to H-5. Starting w/ center plug again.
- 14:18 Starting turning auger. Going through asphalt.

*[Signature]*  
 7/25/16

Location S.E. Rockford Date mon 7/25/16  
 Project / Client Area 4 RAO  
IEPA

H-5

Depth	PIO	
0-1	NAR	Asphalt & gravel fill
1-4.5	Ø.2	Dark brown silty SAND. Pine to med grn, w/ trc fn gravel, claz, no odor
4.5-5	Ø.2	Silt med-crs grn SAND w/ some fn. gravel & 6/17. med. brown, drz no odor
5-6		fn-med SAND w/ trc. Silt, med. brown, drz odor
6-10	Ø.1	Same but light yellow
10-15	Ø.1	brown
15-20	Ø.1	SAA
20-25	Ø.1	SAT slightly coarser, but still fn-med
26.5	1.2	med SAND w/ silt. light grayish brown slight odor, clump
29.5	146	med. odor
35	224	str. odor



Location SE Rockford Date Mon 7/25/16  
 Project / Client Area 4 ERH RAO  
IEPA

- 14:32 Removed center plug and put in knock out plug.  
 14:42 Adding another flight at 5'  
 14:50 Added another flight at 10'  
 15:00 Added a " " 15'  
 15:06 " sitting @ 20'  
 15:12 " sitting @ 25'. Charging augers w/ water.  
 15:25 add auger sitting @ 30'  
 15:30 " @ 35'  
 Taking a moment to make sure there is enough sand for construction. And charging  
 15:39 augers w/ water.  
 15:44 Resume drilling

Depth PID  
38 192 wet SAND Grayish brown  
 Strong odor, visible product.  
 wet

15:44 EOB at 40'  
 Begin installing electrode pipe.

A. J.  
7/25/16

Location SE Rockford Date Mon 7/25/16  
 Project / Client Area 4 ERH RAO  
IEPA

- 16:00 Pipe installed, shot in at bottom. Popped knock-out plug. Adding steel shot/graphite mix.  
 16:20 Shot/graphite mix up to 23'. Start adding sand.  
 16:50 Installation complete. Cleaning up.  
 17:00 John Grabs off site to Area 4 incinerator. TRS + KDS to clean up a little.  
 BTW, Ted (TRS) arrived about 16:30.

A. J.  
7/25/16



Location S.E. ROCKFORD  
 Project / Client AREA 4 ERH RA  
IEPA

Date Tue 7/26/16  
 K&S: MPE-H4

0710 CDM Smith personnel (David Rojas) onsite @ Area 4. Already onsite are TRS personnel Brad Morris & Ted (Highly) and K&S personnel Carlos Santana and Eric DeWitt.

WEATHER: Temp = 78°F Wind = calm  
 Sky = Clear Forecast - clear sky w/ temps in the mid-80s.

PPE: Modified Level D  
 Plan: K&S to continue installing MPEs in Zone 3.

0715 TRS conducted a N&S Tailgate Mtg w/ CDM Smith & K&S personnel.

0725 K&S MI D-120 drill rig to proposed location of MPE-H4. Advanced 12.25" diameter HSAs w/ center plug to 5' bgs then POH w/ HSA & CP, install wooden plug in HSA bit and continue advancing HSAs. See lithology & PID readings on pg 73.

0805 John Grabs (CDM Smith) onsite.

0815 John left site. K&S has advanced HSAs to 25' bgs and begun charging HSAs w/ water before making each 5' flight connections.

D. Rojas 7/26/16

Location S.E. ROCKFORD  
 Project / Client AREA 4 ERH RA  
IEPA

Date Tue 7/26/16  
 K&S: MPE-H4

# LITHOLOGY & PID READINGS @ MPE-H4

DEPTH (ft bgs)	PID (ppm)	LITHOLOGY
0-0.1	—	Asphalt askew
0.1-2.0	39-108	GRAVELY SAND, blk, F-m grn w/ tr c-gr, sli-mid odor, dry, slicky
2.0-3.0	51-41	SILTY SAND, dk dusky brn, F-grn w/ tr med c-gr, sli clayey, tr to few green, sli odor, drip
3.0-4.5	35-21	SILTY SAND, dk brn, F-m grn w/ some c-gr, few to some gravel, drip, sli odor
4.5-6	10.5-8	SAND, med org brn, F-grn, drip, no tr odor
6-9	7.6	SAND, dk org brn mottled w/ dk dusky brn F-grn w/ tr m-cgr, no tr odor, drip
9-12	3.4	SAND, med vel brn mottled w/ dk vel brn, F-grn drip, no odor
12-27	1.5-0.4	SAND, lt-mid vel brn, F-grn, dry, no odor becoming lighter w/ depth
27-34	28.1-39	SAND, lt vel brn, F-grn, sli moist becoming wet below ~29' bgs, sli odor
34-37	44-77	SAND, med grn, F-m grn w/ tr c-gr, med odor, wet, spotty staining becoming darker in color
37-39.5	156-66.7	SAND, med to dk grn, F-m w/ some c-gr, wet, stained, sli less staining & PID in bottom, strong to med odor

0848 K&S have completed advancing HSAs to 39.5' bgs @ proposed MPE-H4 loc. Installed 4" black iron pipe (electrode) in HSAs and begun constructing MPE-H4 using same procedure as for other ~~MPE~~ Zone 3 electrodes. (See Figure on pg 63 for general construction detail.)  
 Note: Brad stated that TRS is installing drip tubes in the Zone 3 MPEs even though the proposed construction doesn't call for them just in case they are necessary for the remediation process.

D. Rojas 7/26/16



Location S.E. ROCKFORD Date Tue 7/26/16  
 Project / Client AREA 4 ERH RA K&S MPE-H4  
MPE-H3  
IEPA

- 0912 David obtained stick-up & water level @  
 MPE-J6: StickUp = 0.73 aqs WL = 26.85' bgs  
 0920 David obtained stick-up & WL @ MPE-H5  
 StickUp = 0.46 aqs WL = 26.83' bgs  
 0930 John returned to the site. K&S have  
 dumped 4.5 mixes of 3/1 graphite/shot  
 mix to bring mix to 23' bgs in annulus  
 and have begun dumping #4 silica sand in  
 HSAs while POH.  
 0955 K&S completed POH w/HSAs. Required  
 26.75 50-lb bags of #4 SD. to bring sd to  
 1' bgs in annulus.  
 1015 K&S have moved D-120 rig to proposed  
 location of MPE-H3 and are preparing  
 to advance 12.25" OD HSAs as @ H4.

DEPTH ft bgs	PIP (PPM)	LITHOLOGY
0-0.1	—	Asphalt
0.1-2.5	45-58	Gravely SAND, dk brn to b/k, F-m grn w/ few c-grn, gravel in limestone fragments, mod odor, dry
2.5-4	32-20	Silty SAND, med org, brown mottled w/ dk brown F-grn, silty color, dry
4-7	27.6	SAND, dk yel brn, F-grn, dry, silty color
7-27	6.7-0.4	SAND, H - med yel brn, F-grn dry, to mod odor
27-33	21-44	SAND, mod yel to grn brn, F-grn, silty, moist becomes wet > 29' bgs, silty to mod odor, potty stain
33-39.5	64-23	SAND, mod grn brn, F-m grn, wet, stained mod to strong odor. In the last 6' coarse grn becoming coarser, gravel w/ depth. Highest PIP of zone from ~38 bgs. Lowest from ~39.5 bgs

David Rojas 7/26/16

Location S.E. ROCKFORD Date Tue 7/26/16  
 Project / Client AREA 4 ERH RA K&S MPE-H3  
IEPA

- 1045 Brian Canrath (IEPA) arrived onsite  
 1100 K&S have advanced HSAs to 25' bgs @ H3,  
 and began changing HSAs w/water @ each  
 connection while continuing to 39.5' bgs.  
 1130 K&S have completed advancing HSAs &  
 began constructing MPE-H3. Required:  
 4.5 mixes of 3/1 graphite/shot mix  
 28 50-lb bags of #4 SD.  
 to construct using same procedure as  
 MPE-H4. See fig. on pg 63 for general details  
 1220 CDM Smith personnel & Brian left  
 the site for lunch while TRS and  
 K&S personnel are securing the site  
 in preparation to leave site for lunch.  
 1330 David returned to the site, TRS and  
 K&S personnel are @ lunch.  
 1347 TRS and K&S personnel returned from lunch  
 1400 John & Brian returned to the site.  
 1410 K&S MI D-120 rig to proposed loc. of  
MPE-H2 and are preparing to advance  
 12.25" OD HSAs (same procedure as at H3)  
 See lithology & PIP on pg 76. Encountered  
 a steel drum @ ~1' bgs. After advancing  
 HSAs to 10' bgs, found that wooden plug had  
 disintegrated and come up in HSA.



Location S.E. ROCKFORDDate Tue 7/26/16Project / Client AREA 4 ERH RA

K&amp;S: MPE-H2

IEPA

LITHOLOGY & PID @ PROPOSED LOC OF MPE-H2		
DEPTH (# bgs)	PID ppm	LITHOLOGY
0-0.1	—	Asphalt
0.1-3.5	3.5	Gravelly SAND, med to dk yel brn, F-m grw, dry, no odor
3.5-11	1.1-0.2	SAND, mod org brn, F-grw, to gravel dry, no odor mottled w/ dk yel brn
11-24.5	0.2-1.8	SAND, lt yel brn, F-grw, no odor dry
24.5-31	0.3-0.4	SAND, lt to mod yel brn, F-grw w/ few m-grw dry becoming moist @ ~26 bgs and wet below 30 bgs, sli odor
31-39.5	3.1-4.5	SAND, mod yel brn to grayish yel brn, F-m grained w/ to c-grw, wet, sli odor

- 1500 K&S POA w/ NSAs to remove dislodged wooden plug and replace before resuming drlg.
- 1515 Brian Connath left site.
- 1535 John Grabs left site.
- 1545 K&S has completed advancing NSAs to 24.5' bgs. Ceased drlg, secured equipment.
- 1555 David obtained stickup & WL @ MPE-H4:  
Stickup = 0.60 ags WL = 26.48 bgs
- 1600 David obtained stickup & WL @ MPE-H3:  
Stickup = 0.74 ags WL = 26.60 bgs
- 1610 K&S personnel left site.
- 1615 David left site while TRS personnel are completing SDFN procedures. 7/27/16

Location S.E. ROCKFORDDate Wed 7/27/16Project / Client AREA 4 ERH RA

K&amp;S: MPE-H2

IEPA

0710 CDM Smith personnel (David Rojas) onsite @ AREA 4. Already onsite: TRS personnel Brad Morris and K&S personnel Carlos Santana and Eric DeWitt.

WEATHER: Temp = 71°F Wind = Calm Sky = clear. Forecast = clear sky & temps in the mid 80s

PPE: Modified Level D

Plan: Complete installation of MPE-H2 then re tool to install vapor piezometers (VPs), temperature monitoring points (TMPs) and groundwater piezometers (GWPs) in Zone 2 & eastern portion of Zone 3.

0715 TRS conducted a K&S Tailgate Mtg w/ CDM Smith & K&S personnel.

0725 K&S resumed drlg @ MPE-H2 loc. See lithology & PID readings on pg 76.

0800 K&S completed advancing NSAs to 39.5' and worked w/ Brad to install MPE-H2 using the same procedures and construction supplies as were used for the other "H" MPEs. See figure on pg 63 for <sup>general</sup> details. Specific quantities:

- 3/4 Graphite Shot Mixes = 4.5
- 50-lb bags of #4 Silica Sd = 35

— DKAger 7/27/16 —



Location S.E. ROCKFORD Date Wed 7/27/16  
 Project / Client AREA 4 ERH RA K&S: MPE-H2  
TMP-K5

# IEPA

0810 ROCKFORD utilities have closed Marshall Street west of the site to perform utility work (tie into water main and locate supply valve to site bldg. & cap the fire suppression line to the site bldg. David informed Utilities personnel (Mike & John) where water lines are for GW Extraction systems. <sup>approx.</sup> <sup>(GWES)</sup>

0840 Bret Baker of Bodine arrived onsite and spoke w/RV personnel. RV personnel requested a drawing showing the GWES piping and Bret stated that Bodine would provide it.

0855 Bret left the site.

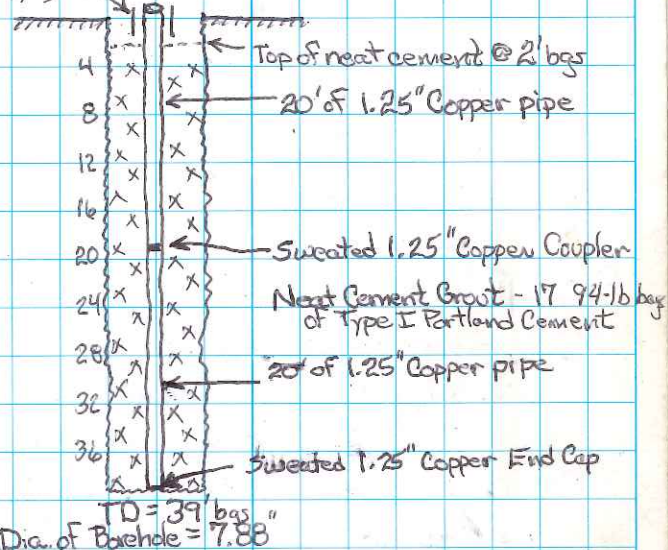
0910 K&S have completed POH w/NSAs and are preparing to switch over to using 4.25" ID (~7.85" OD) NSAs to begin installation of TMPs, GWPs, & VPs.

0930 K&S moved D-120 drill rig to proposed location of TMP-K5. Advanced NSA w/centerplug to 5' bgs then POH w/NSA & CP, put wooden plug in bit of NSA and drill to 39' bgs (changing NSAs w/water after reaching 25' bgs). ——— D Rojas 7/27/16 ———

Location S.E. ROCKFORD Date Wed 7/27/16  
 Project / Client AREA 4 ERH RA K&S: TMP-K5

## CONSTRUCTION OF TMP-K5

2" CPVC Over sleeve  
(Not installed yet)



1030 K&S completed advancing 4.25" NSAs to 39' bgs changed NSAs w/water, mixed neat cement in 55-gal drums using Moyno pump on rig. Mixed 6 94-lb bags of Type I Portland cement / 40 gal H<sub>2</sub>O, lowered 1.75" AW J rods inside NSAs and tag sand in NSAs @ ~30' bgs.

Test NSAs of sand and bump wooden plug. <sup>POH</sup> <sup>rods</sup>  
 1120 Lowered copper pipe in NSAs, Fill NSAs w/grout. <sup>down hole</sup>  
 Begin POH w/NSAs keeping <sup>down hole</sup> full of grout. ——— D Rojas 7/27/16 ———



Location S.E. ROCKFORD Date Wed 7/27/16  
 Project / Client AREA 4 ERH RA K&S: TMP-K5  
VP-K5  
IEPA

1145 K&S mixed more neat grout (6 bags of Portland w/ 40 gal H<sub>2</sub>O) after POH w/ 10' of HSAs @ proposed loc. of TMP-K5.

1210 K&S mixed more neat grout (5 bags of Portland w/ 25 gal H<sub>2</sub>O) after POH w/ 10' more of HSAs. Brought cement to 2' bgs.

1250 K&S completed POH w/ HSAs and cleaned equipment before leaving for lunch.

1300 David left the site for lunch.

1345 David returned to the site.  
 David obtained stickup & WH @ MPE-HR:  
 Stickup = 0.91' bgs WH = 26.63' bgs

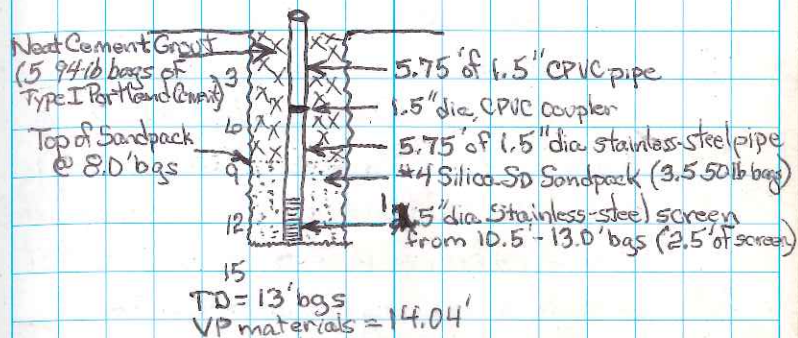
1405 K&S personnel returned to site, moved D-120 rig to proposed location of VP-K5 and advanced 4.25" ID HSAs w/ CP &

13' bgs, POH w/ ~~HSAs~~ CP, ~~put in~~ ~~rod~~ ~~plug~~ ~~in HSA~~ ~~to 13' bgs~~ ~~and advance HSAs to~~ remove CP & 1.75" AWJ rods from inside HSAs, lower VP materials in HSAs, begin POH w/ HSAs while dumping #4 silica sand in HSAs to bring top of sandpack to 8' bgs.

1450 Sand wedged VP materials in HSAs so K&S POH w/ HSAs & VP materials, borehole remained open to 13' bgs. — D Rojas 7/27/16 —

Location S.E. ROCKFORD Date Wed 7/27/16  
 Project / Client AREA 4 ERH RA K&S: VP-K5  
TMP-K4

## CONSTRUCTION OF VP-K5



1505 Lowered VP materials in borehole, dumped 3.5 50-lb bags of #4 sd, then mixed neat cement (5 94-lb bags Type I Portland cement + ~25 gal H<sub>2</sub>O).

1520 K&S pumped neat cement into annulus bringing grout to surface.

1545 K&M moved D-120 rig to proposed loc. of TMP-K4 while Brad resampled rolloff containers to characterize contents for disposal options. Having to re-sample due to previous samples exceeded holding time (See pg 64).

1600 K&S began advancing 4.25" ID HSAs w/ CP to 5' bgs for pilot hole @ proposed loc. of TMP-K4  
 — D Rojas 7/27/16 —



Location S.E. ROCKFORD Date Wed 7/27/16  
 Project / Client AREA 4 ERH RA K&S: TMP-K4  
IEPA

1605 K&S POH w/ HSA & CP, install wooden plugs in HSA bit and begin advancing HSAs @ proposed loc of TMP-K4.

1645 K&S has advanced the HSAs to 24.5' and TRS has requested that they secure the site and SDFN because once the HSAs are advanced past the water table (est. to be @ ~27' bgs), it will be necessary to complete the installation of the <sup>TMP</sup> and this will likely require working beyond the scheduled 10-hr workday and Brad needs to deliver the soil samples collected from the roll-offs to FedEx.

1655 While K&S and Brad are securing the site, David left the site to go to the hotel to write the Daily Activity Report.

David Rojas  
7/27/16

Location S.E. ROCKFORD Date Thur 7/28/16  
 Project / Client AREA 4 ERH RA K&S: TMP-K4  
IEPA

0710 Cox Smith personnel (David Rojas) onsite @ Area 4. Already onsite is Brad Morris (TRS).

WEATHER: Sky = P'tly Cldy Temp = 70°F Wind = Calm  
 Forecast = Increasing clouds, possible rain & thunderstorms in afternoon & temps in the 80s.

PPE: Modified Level D

PLAN: Complete installation of TMP-K4, install TMP-H3, then either attempt to install a GWP w/ 4.25" ID HSAs or resume installation of MPEs inside fenced area.

0715 Discussed <sup>proposed</sup> long term schedule for drilling w/ Brad. Both of us are concerned about potential "bridging" problems if K&S attempts to install sandpack in 4.25" ID HSAs for 2" diameter GWPs. May ask them to bring 6.25" ID HSAs with them next week and postpone attempts to install any GWPs until next week.

0725 K&S personnel arrived onsite: Carlos Santana and Eric DeWitt.

0730 TRS conducted a H&S Tailgate mtg w/ CDM Smith & K&S personnel.

David Rojas 7/28/16



Location S.E. ROCKFORD Date Thur 7/28/16  
 Project / Client Area 4 ERH RA K&S: TMP-K4  
IEPA TMP-H3

- 0800 K&S resumed advancing 4.25" ID HSAs @ proposed loc of TMP-K4
- 0840 K&S completed advancing HSAs to 39' bgs tag, fill in HSAs @ ~38' bgs, began mixing neat cement grout (2 mixes of <sup>five</sup> 94 lb bags Type I Portland cement w/ 30 gal water) in 2 55-gal drums, mixing w/ Moyno pump on D-120 drill rig, then bump plug w/ 1.75" AWJ rods
- 0915 TRS & K&S personnel lower copper pipe of TMP-K4 inside HSAs after pulling the AWJ rods out of the HSAs and began pumping neat cement in HSAs and POH w/ HSAs
- 0945 After POH w/ 20' of HSAs, mixed 2 more batches of neat grout
- 1020 K&S resumed POH w/ HSAs while keeping downhole HSAs full of grout. See general construction log on pg 79.
- 1045 K&S completed POH w/ HSAs and began cleanup of grouting equipment and prepare to move rig to proposed location of TMP-H3
- 1105 K&S advanced 4.25" ID HSA w/ center plug (CP) to 5' bgs @ TMP-H3 location, POH w/ HSA & CP, then began advancing HSAs w/ wooden plug in bit.
- D Rojas 7/28/16

Location S.E. ROCKFORD Date Thur 7/28/16  
 Project / Client Area 4 ERH RA K&S: TMP-H3  
IEPA

- 1158 K&S ceased advancing HSAs after reaching 30' bgs due to inclement weather approaching and observed lightning. Secured drill rig and cuttings (clean).
- 1205 K&S and CDM Smith personnel left site for lunch break while Brad completes <sup>site</sup> securing
- 1305 K&S and CDM Smith personnel returned to the site. Rain has stopped but observed lightning so K&S personnel stated they wished to wait at least 30 min before resuming drilling. Continues to thunder.
- 1350 Resumes mod heavy rainfall and occasional thunder & lightning. Personnel have taken cover in vehicles. Dated on conference call w/ John Grabs (CDM Smith) to 1430
- 1425 Rain has reduced to light rainfall, so K&S resumed drilling @ proposed loc. of TMP-H3
- 1450 K&S completed advancing HSAs to 39' bgs and began mixing neat cement in two 55 gal drums. Lowered 1.75" AWJ rods in HSAs to push out wooden plugs
- 1550 Lowered 2 <sup>20' long</sup> sections of 1.25" dia. copper pipe inside HSAs (cap soldered on bottom & complex between sections), and fill HSAs w/ grout before beginning to POH w/ HSAs.
- David Rojas 7/28/16

\* Each Mix =

- 4.5 94 lb bags Type I Portland
- 25 gal H<sub>2</sub>O



Location S.E. ROCKFORDDate Thurs 7/28/16Project / Client AREA 4 ERH RAK&S: TMP-H3  
GWP-K3IEPA

1610 After POH w/ 20' of HSAs @ TMP-H3, K&S mixed two more batches of neat cement. First batch was 5 bags Portland + 30 gal H<sub>2</sub>O and second was 2 bags Portland + 12 gal H<sub>2</sub>O. (16 total bags)

1645 K&S completed POH w/ HSAs. Top of copper pipe = 1.31' ags. K&S clean grating equip.

1700 K&S moved D-120 rig to proposed loc. of Groundwater Piezometer GWP-K3

Advanced 4.25" ID HSA w/ CP to 5' bgs. POH w/ HSA & CP, install wooden plug, in bit of HSA then drilled to 24.5' bgs

1730 K&S completed advancing HSAs to 24.5' bgs and began preparing to SDFN.

1805 David left the site in route to hotel to write the Daily Activity Report while K&S and TRS personnel complete securing the site before SDFN.

*D Rojas 7/28/16*

Location S.E. ROCKFORDDate Fri 7/29/16Project / Client AREA 4 ERH RAK&S: MPE-G5IEPA

0710 CDM Smith personnel (David Rojas) onsite @ Area 4. Already onsite: TRS personnel Brad Morris and K&S personnel Carlos Santana and Eric Delwitt.

WEATHER: Temp = 69°F Wind = 2-4 mph SW

Sky = cloudy Forecast = temps in the high 70's and rain/thunderstorms in the afternoon

PPE: Modified Level D

PLAN: Because the threads on the GWP stainless steel piping are incorrect and prevent the assembly of GWPs, K&S will move off of GWP-K3 loc. leaving 4.25" ID HSAs in the borehole and move onto proposed loc. of the Multi-phase Extraction electrode MPE-G5 and install it today

0715 TRS conducted H&S Tailgate Mtg. w/ CDM Smith and K&S personnel

0725 K&S moved Dietrich-120 rig to proposed loc. of <sup>and prepared to</sup> MPE-G5, advanced 12.25" diameter HSAs (8.25" ID).

See lithology and PID readings on pg 88.

0730 Began to drizzle lightly, but stopped.

0735 K&S advanced HSA w/ center plug (CP) to 5' bgs. POH w/ HSA & CP, install wooden plug in bit and began drilling. — *D Rojas 7/29/16*



Location S.E. ROCKFORD Date Fri 7/29/16  
 Project / Client AREA 4 ERH RA K&S: MPE-G5  
IEPA

# LITHOLOGY & PID READINGS @ MPE-G5

DEPTH (ft/bgs)	PID (ppm)	LITHOLOGY
0-0.1	0	ASPHALT
0.1-0.5	0.3	GRAVELY SAND, dk gry brn, F-m grn, dry no odor
0.5-1.0	0.1	GRAVELY SAND, med brn mottled w/ dk brn, F-grn dry, no odor, gravel is quartz & 1 mineral
1.0- <del>1.5</del> 2.5	0.1	Silty SAND, dk dusky brn (dk grading to), F-grn sli clayey, organic, to gravel, dry, no odor
<del>2.0</del> 2.5	3.0	Silty SAND, med to dk brn, F-grn, gravel is subangular quartz & 1 mineral, dry, no odor
3.0-5.0	0.0	Silty SAND, med dk brn grading to lt grn brn F-grn, dry, no odor
5.0-12	0.1-0.5	Silty SAND, Hvel gry brn, F-grn dry, no odor, less silty w/ depth
12-25	0.0-2.8	SAND, lt yel brn, F-grn, dry, no odor becoming mottled w/ yel gry brn w/ depth
25-31	6.9-28	SAND, mod yel gry brn grading to brn gry F-grn w/ to m-grn, most becoming wet below ~28' bgs, sli to med odor, to stain
31-39.5	43-238	SAND, greenish brownish gry, F-m grn w/ few to some c-grn, wet, med to strong odor, staining, becoming coarser gravel w/ depth

0905 K&S completed advancing HSAs to 39.5 bgs  
 (have been changing HSAs w/ water since reaching  
 25' bgs). Charged HSAs w/ water while  
 mixing first two batches of 3/1 graphite/shot  
 mix. ComEd rep. onsite to discuss power pole  
 installation w/ Bradburn left.

0918 K&S lowered 4 dia black iron pipe in  
 HSAs. See figure showing construction of MPE  
 on pg. 63 for general details RE: pipe  
 & annulus materials.

D Rajs 7/29/16

Location S.E. ROCKFORD Date Fri 7/29/16  
 Project / Client AREA 4 ERH RA K&S: MPE-G5  
IEPA

0945 K&S and TRS personnel have completed  
 bringing 3/1 graphite/shot mix to 23' bgs in  
 the annulus using 4.5 Mixes and now  
 K&S is continuing to PCH w/ HSAs while dumping  
 #4 Silica sand in annulus.

1010 K&S completed dumping #4 sand. Required  
 32 50-lb bags to bring top of sand to ~6" bgs

1015 K&S moved D-120 drill rig to proposed  
 location of MPE-G4 and set up 8.25" ID  
 HSA w/ CP in preparation to begin advancing  
 the pilot hole for this MPE on Monday.  
 K&S & TRS crews secure site for the  
 weekend.

1020 David obtained stickup & WL readings  
 @ MPE-G5: Stickup = 0.71 bgs WL = 26.79 bgs

1045 David left site while K&S and  
 TRS personnel are securing the  
 site and preparing to leave for  
 the weekend.

David Rajs  
 7/29/16



Location S.E. ROCKFORD Date Mon 8/1/16  
 Project / Client AREA 4 ERH RA K&S: MPE-G4  
IEPA

0810 CDM Smith personnel (David Rojas) onsite  
 @ Area 4. No other personnel onsite yet - gate locked

WEATHER: Sky - clear to pty cldy Temp = 71°F  
 Wind = 1-3 mph ESE Forecast - clearing  
 skies & temps in the mid-80s

PPE: Modified Level D

Plan: K&S & TRS personnel to arrive onsite @  
 ~9:00 AM. K&S to resume installation of  
 "G" MPEs.

0815 David proceeded to CDM Smith trailer to  
 pick up supplies.

0838 K&S personnel (Carlos Santana & Eric  
 DeWitt) onsite. Brought DPT Geoprobe 1610

0910 TRS personnel (Jeff Riffe) onsite.

0930 TRS conducted N&S Tailgate Mtg w/ K&S  
 and CDM Smith personnel. Carlos is checking  
 Diedrich-120 drill rig and Eric is assisting  
 Jeff unload a supply truck that arrived onsite.

1000 K&S began advancing 8.25" ID (12.25" OD)  
 NSAs @ proposed location of MPE-G4. See  
 lithology & PID readings on pg 91. Advanced NSA  
 w/ center plug (CP) to 5 bgs. POH w/ NSA & CP, then  
 install wooden plug in NSA bit and resume chg.

David Rojas 8/1/16

Location S.E. ROCKFORD Date Mon 8/1/16  
 Project / Client AREA 4 ERH RA K&S: MPE-G4  
IEPA

LITHOLOGY & PID READINGS @ MPE-G4		
DEPTH (ft bgs)	PID (ppm)	LITHOLOGY
0-0.1	—	Asphalt
0.1-0.5	0.2	Gravelly SAND, dk gray-brown, F-in grs chgs, no cda sli to med silty
0.5-1.0	0.3	Gravelly SAND, med brn mottled w/ dk brn F-gr chgs, no cda
1.0-4.0	0.1	Silty SAND, dk dusty brn grading to dk brn, sli to med clayey, no cda, chgs
4.0-5.0	0.0	Silty SAND, med crn brn, f-gr, drpy, no cda
5.0-6.0	0.5	Silty SAND, lt to med gray-brown, F-gr, drpy, no cda
6.0-8.0	0.3	Silty SAND, med yel to brn, F-gr, drpy, no cda
8.0-12	0.5	SAND, med gray-brown, F-gr, drpy, no cda
12-27	0.6-0.9	SAND, med gray-brown, F-gr, drpy, no cda, rusty 26
27-32	229-57	SAND, med gray brn, F-gr, drpy, no cda, rusty 26 becoming wet below 30 bgs. Silty med crn
32-36	83-128	SAND, med gray brn, F-gr, drpy, no cda, rusty 26 cgr, med strong cda, staining, wet
36-39.5	141-186	SAND, med gray brn, F-gr, drpy, no cda, rusty 26 stained, strong cda, wet
1005	John Grebs (CDM Smith) and Ted Highley (TRS) onsite.	
1155	K&S have advanced NSAs to 24.5' bgs and changed NSAs w/ water. Decided to break for lunch before continuing to advance NSAs below water table (WT).	
1205	CDM Smith & K&S personnel left site.	
1300	CDM Smith & K&S personnel returned to site. Then, John left the site in route back to Chicago. K&S personnel are disassembling piping to Moyno pump to remove cement residue that is clogging valves.	

David Rojas 8/1/16



Location S.E. ROCKFORD Date Mon 8/1/16  
 Project / Client AREA 4 ERH RA K&S: MPE-G4  
MPE-G3  
IEPA

1340 K&S changed NSAs w/water and resumed chlp. @ proposed loc. of MPE-G4.

1410 K&S completed advancing NSAs to 39.5' bgs, changed NSAs w/water, lowered 4" dia black iron piping of electrode in NSAs and began backfilling annulus with graphite & shot 3/1 mix after first dumping bag of shot and pushing wooden plug out of bit by pushing down on the 4" pipe w/the auger drive cap. TRS personnel assist in the mixing & dumping of 3/1 graphite/shot mix.

1450 Completed bringing 3/1 graphite/shot mix to 23' bgs using 4 mixes and began filling the remainder of the annulus w/#4 silica sand. Required 32 50-lb bags of #4 SD to bring sand to 0.5' bgs.

1545 K&S completed POH w/NSAs and moved D-120 rig to proposed loc. of MPE-G3 and advance 8.25" NSA w/CP to 5' then POH, remove CP, install wooden plug and resume chlp. See pg 93 for lithology and PID readings.

1630 David obtained measurements of stick up and Wh @ MPE-G4 Stick Up = 0.162 ags  
 WE = 26.46' bgs. — D. Rojas 8/1/16 —

Location S.E. ROCKFORD Date Mon 8/1/16  
 Project / Client AREA 4 ERH RA K&S: MPE-G3  
IEPA

# LITHOLOGY and PID @ MPE-G3

DEPTH (ft bgs)	PID (ppm)	LITHOLOGY
0-0.1	—	ASPHALT
0.1-1.5	2.9	Gravelly Silty SAND, blk to dk dusky brn F-m gm, dry, sli odor
1.5-2.5	4.8	Gravelly Clayey SAND, dk dusky brn, F-m gm dry to sli moist, sli odor
2.5-3.5	1.9	Gravelly Silty SAND, dk red brn, F-m gm dry, no odor
3.5-6.0	2.5	Silty SAND, med to dk org brn, F-gm, dry, no odor
6.0-18	3.0-15	SAND, lt to med gel brn, F-gm, dry, no odor, sli silty becoming less silty lighter
18-24.5	0.1-0.6	SAND, lt yel brn, F-gm dry to sli moist, no odor
24.5-31	0.3-108	SAND, lt to med grayish yel brown, F-gm w/few med grs, wet, no odor, wet beds ~ 28 bgs
31-35	38-58	SAND, med gm bnd gray, F-gm w/some m-gm, wet, some staining, med odor
35-39.5	72-65	SAND, A.A. except F-m gm w/lt c-gm more predominant staining, med strong odor

From 8/2/16

BLANK — D. Rojas 8/2/16

1650 K&S ceased advancing the NSAs @ 24.5' bgs because there isn't enough time to complete the installation of MPE-G3. Will finish tomorrow so we don't advance bit below WT. K&S & TRS personnel are securing site & maintaining equipment. TRS personnel are unloading a delivery of sand and Portland cement.

1658 David left site. — D. Rojas 8/1/16 —



Location S.E. ROCKFORD Date Tue 8/2/16  
 Project / Client AREA 4 ERH RA K&S: MPE-G3  
IEPA

0710 Cdm Smith personnel (David Rojas) onsite @ Area 4. Already onsite: Carlos Santana & Eric DeWitt of K&S and Ted Aghley of TRS.  
 WEATHER = Temp: 70°F Wind: 1-3 S Sky: clear  
 Forecast: Chance of afternoon showers, temps in 80s.

PPE: Modified Level D

PLAN: Complete installation of MPE-G3 then return to GWP-K3 to complete it.

0720 Ted conducted a K&S Tailgate mtg w/ CDM Smith and K&S personnel. K&S personnel are making repairs to Moyno pump piping.

0730 Jeff Riffe (TRS) arrived onsite.

0740 Jeff & Ted are using the thread die and a file to repair threads on SS piping for GWPs while K&S charge NSAs w/ water and prepare to continue drilling @ MPE-G3. See lith log & PID readings on pg. 93.

0825 K&S completed advancing NSAs to 39.5 bgs, charged NSAs w/ water while TRS assists in mixing 3/1 graphite/shot mix in wheelbarrow and bringing 4" black iron pipe for electrode from staging area inside bldg. See MPE contract figure on pg 63 for general details on materials used to construct MPE-G3. — JRR 8/2/16

Location S.E. ROCKFORD Date Tue 8/2/16  
 Project / Client AREA 4 ERH RA K&S: MPE-G3  
GWP-K3  
IEPA

0900 TRS & K&S completed dumping 4.25 3/1 graphite shot mixes to bring mix up to 23' bgs and began dumping #4 silica sand in annulus.

0940 K&S dumped 32 50-lb bags of #4 SD while continuing to POH w/ HSAs to bring #4 SD to 0.5' bgs in annulus. Also, placed 4" long drip tube in annulus w/ bottom @ 3.5' bgs.

1000 K&S moved Diedrich-120 to proposed loc. of GWP-K3 where they had advanced 4.25" ID HSAs to 24' bgs on 7/28/16 (See pg 86) and continued to advance NSAs (charging them w/ water between each 5' connector).

1043 K&S completed advancing NSAs to 45.5 bgs. Because there was ~6" of sand in NSAs, K&S lowered 1.75 AWJ rods inside NSAs and flushed (suspended) sand material then POH w/ rods and lowered SS GWP materials inside NSAs, then began slowly pouring #4 silica sand inside NSAs while picking up (PU) HSAs keeping at least 1' of sand inside NSAs. ~~Repaired A~~

1150 After POH w/ 20' of NSAs, David observed that top of GWP had risen from 30' to 44' a.g.s., K&S was able to gently push down to 42' bgs and continue adding SD & PD NSAs. — JRR 8/2/16

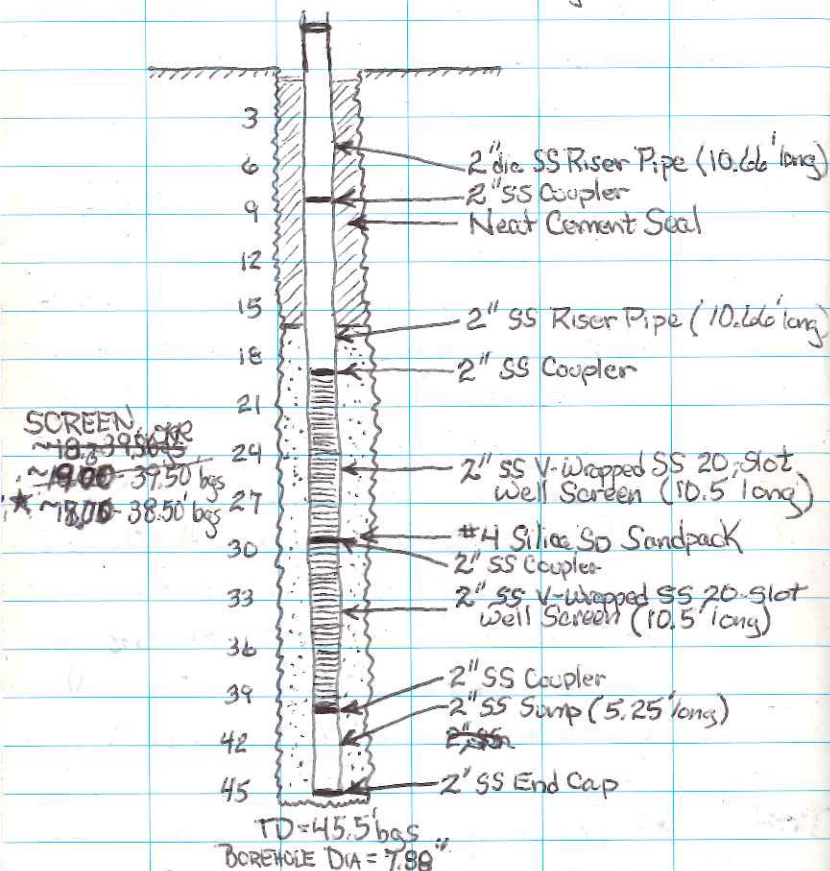
Tag "q" of sd inside SS pipe materials



Location S.E. ROCKFORD Date Tue 8/2/16  
 Project / Client AREA 4 ERH RA K&S: GWP-K3  
IEPA

# CONSTRUCTION OF GROUNDWATER PEZOMETER GWP-K3

Total length of SS materials = 47.6'



NOTE: Lengths in parentheses include couplings & exposed threads.

★ After PU H&A and installing sandpack, SS pipe had risen ~1' from depths shown on figure so as shown on figure sandpack was brought to 16' bgs.  
 Rosen 8/2/16

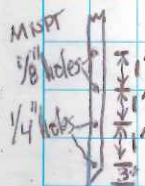
Location S.E. ROCKFORD Date Tue 8/2/16  
 Project / Client AREA 4 ERH RA K&S: GWP-K3  
IEPA TRS: MPE-L4 Entrainment Pipe & Electrode Cap

1224 K&S has brought #4 Silica Sand up to 16' bgs in annulus of GWP. Since the GWP pipe materials have been picked up ~1' while ~~PP~~ PU HSAs, the screened interval is now ~18.00'-38.50' bgs.

1230 All personnel left site for lunch after securing the site.

1330 All personnel have returned to the site. K&S personnel began mixing neat cement in preparation for grouting remainder of annulus to 6" bgs. Mixed 4.6 94-lb bags of Type I Portland cement in ~25 gal water using Moyno pump on drill rig & plastic drum. Pumped neat cement into HSAs while POH w/ H&A keeping downhole HSAs full of cement.

1345 Brad Morris (TRS) arrived onsite. Ted is constructing the 1" copper entrainment pipe (MNPT) and 4" cap for MPE-L4. Tagged WH @ 28.03 btoe. Jeff & Brad assisted Ted in installing 4" head & MNPT to bottom of MNPT pipe is @ 28.6' btoe.



Rosen 8/2/16



Location S.E. ROCKFORDDate Tue 8/2/16Project / Client AREA 4 ERH RA  
IEPAK&S: GWP-H6  
TRS: MPE-L5  
Entrainment Pipe  
& Electrode Cap

1500 K&S moved D-120 to proposed loc. of GWP-H6 and prepared to advance 4.25" ID HSA w/ CP & 5' bgs, POH w/ HSA CP install wooden plug in HSA bit and resume advancing HSAs.

DEPTH (ft bgs)	PID (ppm)	LITHOLOGY
0-3	0.1	Gravelly SAND, med yel brn mottled w/ dk brn, F-m grn, dry, no odor, silty
3-6	0.3	Silty SAND, dk brn, F-gr w/ few mgn & trc-grn, dry, no odor
6-8	0.1	Silty Gravely SAND, med to dk yel brn F-grn, dry, no odor
8-11	0.1-0.3	SAND lt to med yel brn, F-grn, silty, dry, no odor, becoming less silty & lighter
11-14	0.1-	SAND med yel brn, F-grn, silty, dry, no odor
14-24.5	0.1	SAND, lt yel brn, F-grn, dry, no odor becoming silty med to w/ depth
24.5-30	0.3-0.9	SAND, lt to med yel brn, F-grn, lt to F-m grn, silty med becoming med to wet & yel, no odor
30-33	0.9-1.1	SAND, med yel brn, F-m grn, wet, no odor
33-38	53.2-168	SAND, med yel brn, F-m grn, wet, mod silty, trc F-m c-grn w/ depth, dk w/ depth
38-41	186-265	SAND, mod yel brn, F-m grn, w/ trc c-grn, strong odor, wet, stained
41-48	226-76	SAND, mod yel brn, F-m grn, w/ c-grn, strong to med odor, spotty staining, wet

1510 Ted is working on constructing <sup>cap and</sup> ~~en~~ pipe for MPE-L5. He tagged WL @ 28.3' btoc so is constructing <sup>en</sup> ~~en~~ pipe to be set @ 28.9' btoc

1605 K&S have advanced HSAs to 24.5' bgs and are securing site in preparation for leaving for the night. — 8/2/16 —

Location S.E. ROCKFORDDate Tue 8/2/16Project / Client AREA 4 ERH RA  
IEAPK&S: GWP-H6  
TRS: MPE-L5 Entrainment  
Pipe & Electrode Cap

1620 TRS crew are installing <sup>en</sup> ~~en~~ and electrode cap on MPE-L5.

1630 K&S personnel have completed routine maintenance on D-120 rig, secured the rig and drilling equipment and supplies, and are leaving the site for the night.

1640 David left the site while TRS personnel are securing the site in preparation for leaving for the night.

8/2/16  
David  
Jois



Location S.E. ROCKFORD Date Wed 8/3/16  
 Project / Client AREA 4 ERH RA K&S: GWP-H6  
 IEPA

0708 CDM Smith personnel (David Rojas) onsite @ Area 4. Already onsite: TRS personnel: Brad Morris, Ted Hightley, & Jeff Riffe and K&S personnel Carlos Santana and Eric DeWitt.

WEATHER: Temp = 74°F Sky: Clear Wind: Calm  
 Forecast: Possible afternoon showers, temp low 90s

PPE: Modified Level D

Plan: K&S to install GWP-H6 then use DPT to install one of the "D" MPEs. TRS to continue installing entrainment pipes in MPE electrodes.

0715 TRS conducted Health & Safety (H&S) Tailgate Mtg. w/ CDM Smith & K&S personnel

0720 K&S resumed drilling w/ D-120 rig and 4.25" HSAs @ proposed location of GWP-H6. See pg 98 for lithology & PID readings.

0820 K&S completed advancing HSAs to 48.0 bgs (overdrilled by 0.5' because have been unable to keep a charge in HSAs but tagged the wooden plug w/ weight tape so not much sediment inside HSAs). K&S lowered 1.75" AWT rods inside HSAs and used Moyco pump to flush w/ water and bump wooden plug out w/ rods.

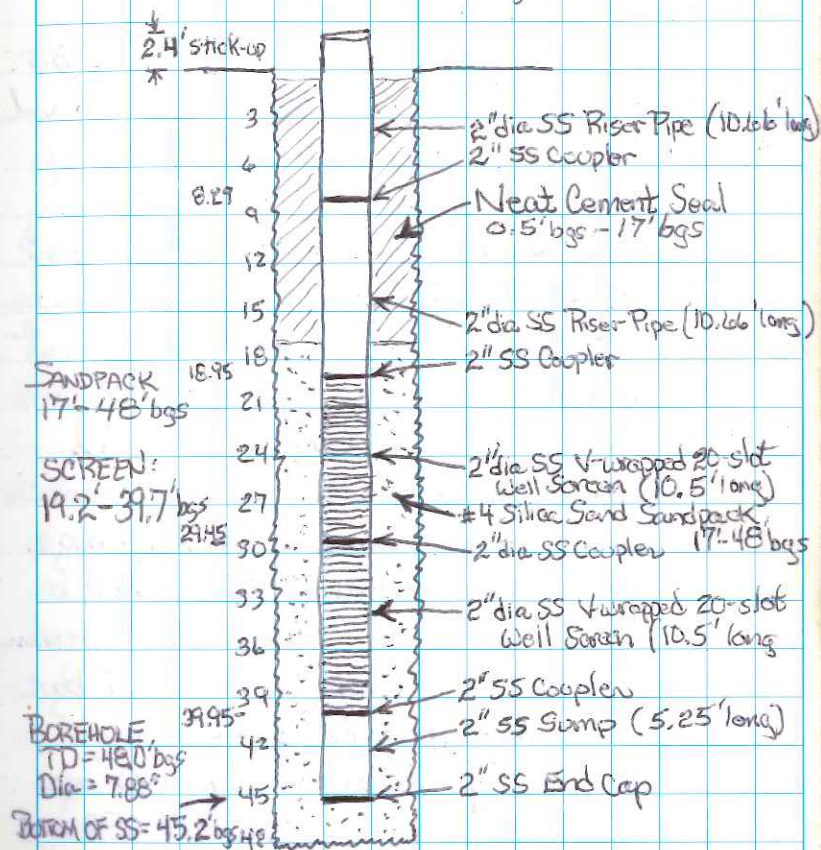
— David Rojas 8/3/16 —

Location S.E. ROCKFORD Date Wed 8/3/16  
 Project / Client AREA 4 ERH RA K&S: GWP-H6  
 IEPA

0828 K&S Pilled out of HSAs w/ rods and lowered SS GWP materials in HSAs.

### CONSTRUCTION OF GWP-H6

Total length of SS Materials = 47.16'



Note: lengths in parentheses include couplings & exposed threads

— David Rojas 8/3/16 —



Location S.E. ROCKFORD Date Wed 8/3/16  
 Project / Client AREA 4 ERH RA K&S: GWP-46  
IEPA

0910 K&S began dumping #4 Silica/Bluestone sand inside HSAs while POH w/HSAs to construct sandpack for GWP-46. Raised top of SS materials ~2' after dumping 3 50-lb bags of sand putting bottom of SS materials @ ~45.5 bls and continued adding #4 sand and POH w/HSAs keeping at least 1' of sand in HSAs until after adding a total of 19 50-lb bags the sandpack was brought up to 17' bgs in annulus.

1010 K&S began mixing neat cement in plastic drum (30 gal H<sub>2</sub>O + 6 94-lb bags of Type I Portland cement). David measured top of GWP SS materials from ground surface to be 2.4' ags, and tagged inside of SS materials to be 47.5' below top of SS materials. So, screen interval should be ~19.2'-39.7' bgs.

1040 K&S have completed grouting the remainder of the annulus up to 0.5' bgs w/ ~25 gal of grout and POH w/ HSA and are cleaning HSAs and grouting equipment.

*D. Rojas*  
 8/3/16

Location S.E. ROCKFORD Date Wed 8/3/16  
 Project / Client AREA 4 ERH RA TRS: MPE-L6, MPE-M5  
IEPA & other MPEs

1100 TRS personnel have installed 1" dia copper entrapment pipe & electrode cap on MPE-L6. Static water level (SWL) in the electrode was 28.4' below top of electrode and the base of the EP was set @ 28.9' btoe. Currently, TRS is installing entrapment pipe in MPE-M5. SWL = 27.9' btoe.

Bottom of EP = 28.4' btoe

TRS is cutting the 1" copper pipes and drilling the air vent holes (see pg 97 for details) for EPs to be placed in the following MPEs:

MPE	SWL (ft btoe)	BOTTOM OF EP (ft btoe)
K7	27.92	28.51
L5	28.30	28.88
L4	28.10	28.67
L7	27.15	27.73
M6	27.99	28.57

1120 TRS, K&S, and CDM Smith personnel looked at "D" MPE proposed locations and determined that MPE-D5 may need to be moved to avoid overhead electrical lines so after lunch K&S will MIRE Geoprobe @ proposed loc. of MPE-D4.

*D. Rojas* 8/3/16



Location S.E. ROCKFORDProject / Client AREA 4 ERH RAIEPADate Wed 8/3/16  
K&S: MPE-D4

- 1140 CDM Smith & K&S personnel left site for lunch break while TRS personnel are securing the site to go on lunch break.
- 1225 David returned to the site from lunch. Site is locked up.
- 1245 TRS personnel returned to the site.
- 1255 K&S personnel returned to the site.
- 1305 K&S personnel MURU Geoprobe 6610 DPT rig @ proposed loc. of MPE-D4 and verified that top of rig w/ mast fully extended is > 10' from powerline. Then, make preparations for advancing 8.25" ID (12.25" OD) NSAs after hand dig a utility clearance bough to 5' bgs.
- 1325 Advanced 2 pilot holes w/ hand auger to 5' bgs to verify subsurface utility clearance.
- 1350 K&S advanced the lead NSA/CP to 5' bgs, then POH w/ NSA & CP, put wooden plug in bit of NSA then resumed dig. See lithology & PID readings on pg 105.
- 1535 K&S ceased advancing NSAs after reaching 25' bgs because of unknown timing to complete installation which will be necessary once advancing past WT. ——— D. Rojas 8/3/16 ———

Location S.E. ROCKFORDProject / Client AREA 4 ERH RAIEPADate Wed 8/3/16  
K&S: MPE-D4  
TRS: Multiple MPE  
Entrainment Pipe Install

LITHOLOGY & PID READINGS @ MPE-D4		
DEPTH (ft bgs)	PID (ppm)	LITHOLOGY
0-0.5	-	ASPHALT
0.5-1.4	0.3	LIMESTONE ROADBASE
1.4-2.0	0.1	Silty Gravelly SAND, dk brn, f-gr, dry no odor
2.0-2.5	0.3	Silty SAND, med to dk brown, f-gr w/ a med dry to slick soil
2.5-3.0	0.1	Silty SAND, med yel brn, f-g, dry no odor
3.0-6.0	0.3	Silty SAND, lt yel brown, f-gr, dry no odor becoming less silty w/ depth
6.0-12	0.0	SAND, lt greenish yel brn, f-gr, dry no odor
12-28	0.0-0.08	SAND, lt yel brn f-gr, dry no odor. Note - 0.5 ppm @ 18' bgs becoming waste @ 26'
28-34	8.1-177	SAND, lt to med greenish yel brn, f-gr, fair many spots staining, slight odor with
34-37	183-191	SAND, med greenish brown, f-gr, dry to a few c-grn, stained, strong odor
37-39.5	172-342	SAND, med greenish brown, f-gr, dry to a few c-grn, stained, strong odor

- 1545 K&S personnel have placed a wooden plug in the top of the NSAs to secure them for the night. Also placed a safety cone & both barricades to protect NSAs. K&S personnel are also securing equipment inside fenced area.
- TRS personnel have installed the entrainment pipes in all of the MPEs listed on pg 103 and are securing site in preparation for SDFN.
- 1605 David left the site en route to hotel. 8/3/16



Location S.E. ROCKFORD Date Thur 8/4/16  
 Project / Client AREA 4 ERH RA K&S: MPE-D4  
 IEPA

0725 CDM Smith personnel (David Rojas) onsite @ Area 4. Already onsite: Jeff R. Ffe, Ted Nighley & Brad Morris of TRS and Carlos Santana & Eric DeWitt of K&S.

WEATHER: Sky = clear Temp = 73°F Wind = 1-3 mph S  
 Forecast = Temp in the low 90s

PPE: Modified Level D

PLAN: K&S to install MPE-D4 & MPE-D3 and TRS to continue installing extrainment pipes and electrode caps on installed MPES.

0730 TRS conducted a K&S Tailgate Mtg w/ K&S and CDM Smith personnel onsite.

0735 K&S moved Geoprobe 6610 DT rig & drill string (DS) supplies to MPE-D4 loc. and resumed drilling after removing temporary wooden plug on top of HSA and charging HSA w/ water.

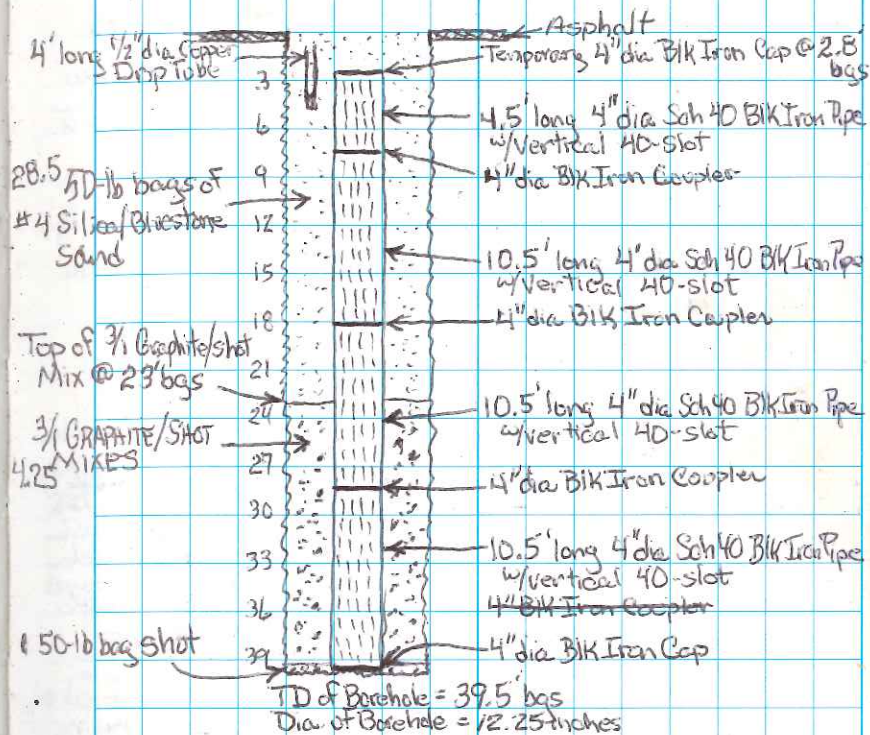
See table on pg 105 for lithology & PD readings.

0830 K&S completed advancing HSA to 39.5 bgs. TRS & K&S personnel lowered 4" dia Blk iron pipe material (last connection lowered w/ retrievable strap) then dumped 1 bag of shot then 1.75 mixes of 3/1 graphite/shot mix.

DRojas 8/4/16

Location S.E. ROCKFORD Date Thur 8/4/16  
 Project / Client AREA 4 ERH RA K&S: MPE-D4  
 IEPA

## CONSTRUCTION OF MPE-D4



0915 K&S began POH w/ HSA's while installing Graphite/shot mix up to 23' bgs, then #4 Silica/Bivestone Sand to surface. TRS placed a 4' long 1/2" dia. Copper pipe w/ SS screen clamped to bottom inside HSA's as K&S complete installing #4 sand and finished POH w/ HSA's. However, TRS will have to lower it when they do trenching.

DRojas 8/4/16



Location S.E. ROCKFORD Date Thur 8/4/16  
 Project / Client AREA 4 ERH RA K&S: MPE-D3  
IEPA

1010 K&S moved the Geoprobe 6610DT rig to the proposed loc. of MPE-D3, cut a hole in the asphalt w/ the 8.25" ID NSA, then advanced 2 adjacent pilot holes to 5' bgs to verify subsurface utility clearance.

1030 K&S advanced the lead NSA w/OP to 5' bgs, then POH w/DS, installed wooden plug in bit of lead NSA and resumed drlg.

DEPTH (ft/bgs)	PID (ppm)	LITHOLOGY
0-0.5	—	Asphalt
0.5-1.0	0.0	SAND & LIMEROCK ROAD BASE, dry, no odor
1-2	0.0	SAND, dk dusky brn, F-gr, silty, dry, no odor, clay is as plasticity
2-4	0.0	Silty SAND, mod yet brn mottled w/ dk gel brn lighter in color w/ depth. F-gr, dry, no odor
4.0-6	0.0	Silty SAND, lt grayish brn mottled w/ mod yet brn F-gr, less silty w/ depth, dry, no odor
6-14	0.1-0.3	SAND, lt grayish yet brn, F-gr, dry, no odor, mottled w/
14-28	0.3-4.3	SAND, mod to mod org brn, F-gr, dry to silty moist, no odor until 28' bgs - silty
28-31	18.7-45	SAND, greenish grayish yet brn, F-gr, moist to wet, silty to mod odor, spots staining
31-35	47-97	SAND, mod grayish greenish tan, F-gr, w/ few in-gr, mod - strong odor, stained
35-39.5	120-250	SAND, mod greenish gray, F-gr, increased amt of dk mineral grains, wet, stained, wet, strong odor, to few c-grn increase w/ depth, bottom PID = 208 ppm from cuttings on flight of lead auger after POH

David Rogers 8/4/16

Location S.E. ROCKFORD Date Thur 8/4/16  
 Project / Client AREA 4 ERH RA K&S: MPE-D3

1145 K&S have advanced 4.25" ID NSAs to 24.5' bgs. Left rig on location, but secured area before all personnel left site for lunch break.

1245 COM & K&S personnel returned to site from lunch break but site is locked up.

1255 TRS personnel returned to site & unlocked gate so K&S was able to resume drilling at MPE-D3

1345 K&S completed advancing the NSAs to 39.5' bgs and w/ help from Jeff Riffe of TRS lowered the 4" dia black iron pipe of the electrode in the augers using same method as @ MPE-D4. Top of electrode is @ 2' 10", same as @ MPE-D4 (see Fig. showing construction of electrode on pg 107).

1415 Brett Baker (Bodine) arrived onsite and showed Jeff & Brad the suspected location of conduits & piping under Marshall St and @ Vault. Based on his recollection of where subsurface wiring/piping is located, the only location of interferum is MPE-C4 (will have to be moved EWH, at least 4-5 feet).

David Rogers 8/4/16



Location S.E. ROCKFORD Date Thur 8/4/16  
 Project / Client AREA 4 ERH RA K&S: MPE-D3  
IEPA

1435 K&S (w/help from Jeff Riffe [TRS]) have finished dumping 3/4 Graphtite / shot mix in annulus bursary mix up to 22' bgs w/ 4.5 mixes and are now dumping #4 sand in NSAs while continuing to POH.

1450 Brett left site.

1500 K&S finished dumping #4 Silica/Blaststone sand to bring sand to surface. Required 28.5 50-lb bags of sand. Top of drip tube @ ~1' bgs (will lower @ time of trenching). Moved Geoprobe rig to proposed location of MPE-D5 and K&S personnel took a 15-minute break.

1525 K&S cut hole in pavement @ proposed location of MPE-D5 and advanced 2 adjacent hand auger pilot holes to verify subsurface utility clearance.

1540 K&S advanced lead NSA w/CP & 5' POH installed wooden plug in bit on lead NSA and resumed drilling. See lithology and PID readings on pg 111.

1635 K&S have completed advancing NSAs to 2.5 bgs and are securing the site the same way they secured last night @ MPE-D4 loc. See pg 105.

Location S.E. ROCKFORD Date Thur 8/4/16  
 Project / Client AREA 4 ERH RA K&S: MPE-D5  
IEPA TRS: Multiple MPE  
Entrainment Pipe Installations

LITHOLOGY & PID READINGS @ MPE-D5		
DEPTH (ft bgs)	PID (ppm)	LITHOLOGY
0-0.5	—	ASPHALT
0.5-1.5	0.0	LIMEROCK ROADBASE (sandy)
1.5-2.5	0.0	Silty SAND dk dusky brn, fgn sli clayey and, no odor, clay is low plasticity
2.5-3.5	0.0	Silty SAND, med to dk brn, fgn, no odor
3.5-8.0	0.1	Silty SAND, lt yel brn, fgn, dry no odor, less silty w/depth
8.0-11	0.0	SAND, lt to med grayish yel brown, fgn sli silty, no odor, dry, mottled yellow
11-18	0.0-0.1	SAND, lt yel brn, fgn, dry, no odor, sli silty packing, less silty w/depth
18-25	0.0-0.1	SAND, A.A. except tr to few med gcl and only tr silty, 0.4 ppm @ 18' bgs
25-34	0.5-162	SAND, lt yel brn, fgn, w/few some med gcl, moist becoming wet @ ~, broader
34-37	20.1-47.2	SAND, lt gray yel brn, fgn, gcl, silty, odor, wet, spotty staining
37-38	118-167	SAND, A.A. except med to strong odor and coarser grained, lt to med yel
38-39.5	87-202	SAND, mod gcl brn gray, fgn, 4' tr to few gcl, spotty staining, med staining wet

1645 TRS personnel are securing the site. Today they installed entrainment pipes, electrode caps and metal cap fittings @ these MPEs:

MPE	SWL (ft bgs)	BOTTOM OF EP (ft bgs)	MPE	SWL	BOTTOM OF EP
K3	27.9	28.6	J3	27.5	28.1
K4	28.5	29.1	J4	27.64	28.25
K6	28.15	28.9	J5	27.94	28.60
→ K5	Need to cut off cap		J6	27.70	28.35

1705 David left site in route to hotel to download photos and write Daily Activity Report.

— S. Rojas 8/4/16



112 Location S.E. ROCKFORD Date Fri 8/5/16  
Project / Client AREA 4 ERH RA K&S: MPE-D5  
IEPA

0715 CDM Smith personnel (David Rojas) onsite @ Area 4. Already onsite: TRS personnel: Ted Highley & Jeff Riffe and K&S personnel Carlos Santana & Eric DeWitt.

WEATHER: Temp = 64°F Wind = 4-8 mph N  
Sky = Overcast Forecast = Clearing  
sky and temps in the low to mid 80s

PPE: Modified Level D

PLAN: K&S to finish installation of MPE-D5, load Geoprobe on transport trailer, MIRU Diedrich-120 rig on GWP-65 location and possibly drill down to water table. TRS personnel will continue to install entrainment pipes, electrode caps & cap fittings @ MPE locations where electrodes have been installed.

0725 TRS conducted a K&S Tailgate Mtg w/ CDM Smith & K&S personnel.

0730 K&S MIRU Geoprobe 6610DT rig @ MPE-D5 location where they had already advanced 8.25" ID NSAs to 25' bgs yesterday and prepared to continue dls.

0740 K&S resumed advancing NSAs. See lithology & PID readings on pg. 111.

DRojas 8/5/16

113 Location S.E. ROCKFORD Date Fri 8/5/16  
Project / Client AREA 4 ERH EA K&S: MPE-D5  
IEPA TRS: Entrainment Pipe Installation - "H" MPEs

0825 K&S have completed drilling to 40' bgs and begun working w/ TRS personnel to construct MPE-D5 electrode, 3/1 graphite/shot mix and #4 Silica/Bluestone sandpack. See figure on pg. 107 for general construction details. Specific details:

Top of Electrode = 2.85' bgs

Top of 3/1 Graphite/Shot Mix = 4.25'

# of 50-lb bags of #4 Silica/Bluestone = 29

Top of Drip Tube = 2' bgs

0920 K&S have completed POH w/ NSAs and filling annulus of MPE-D5 w/ Graphite/Shot Mix and #4 Silica Bluestone sand and are cleaning up equipment and prep to load Geoprobe on transport trailer.

SEE Measurements in Table on Pg 114

RRR

NOTE: This was the case for the first installed on 8/4/16 too

TRS personnel have collected static water level readings in the 5 "H" MPE and assembled 1" copper entrainment pipes for these MPEs. Note: bottom air vent hole is 6" from bottom of pipe i.e. all vent holes moved up 9" from detail on pg 97. Also, the length of the pipes are from bottom of electrode cap which is 1" above the top of the 4" black iron pipe.

David Rojas 8/5/16



Location S.E. ROCKFORD Date Fri 8/5/16  
 Project / Client AREA 4 ERH RA K&S: GWP-G5  
IEPA TRS: Entrainment Pipe  
 Installation @ "H" MPEs

0950 TRS began lowering 1" dia. copper pipe entrapment pipes in "H" MPE electrodes. Note: bboe = below bottom of cap

MPE ELECTRODE (ft bboe)	W/L (ft bboe)	LENGTH OF EP (ft bboe)
H2	27.64	28.22
H3	27.43	28.01
H4	27.19	27.77
H5	27.39	27.97
H6	27.72	28.30

Also, TRS is installing electrode caps and cap fillings @ these 5 MPEs.

1005 K&S MRO Diedrich-120 @ proposed location of GWP-G5 and began advancing 4.25" ID (first 5' w/EP) then

(ft bgs) DEPTH	PID (ppm)	LITHOLOGY
0-0.1	-	ASPHALT
0.1-0.5	0.2	Coarsely Silty Sand, med blue mottled w/ dk bms dry, no odor, f-m gm w/ some c-gw
0.5-2.5	0.5	Silty SAND, dk dusky brn, f-m gm w/ few c-gw, silty clay (top pl), silty moist
2.5-2.5	0.1	Silty SAND, dk reddish brn, f-m gm w/ few med gm, brn, dry, no odor
3.5-6	0.2	Silty SAND, med orange brn, f-gw w/ m-cgw, dry, no odor
6-17	0.6	SAND, lt grayish yel brn, f-gw, dry, no odor
17-24.5	0.6	SAND, AA except lt-med yel brn

CONTINUED ON PG 116

1045 K&S ceased advancing NSAs @ 24.5 bgs & SDFW.  
 1115 K&S personnel & David left while TRS personnel are securing the site for the weekend. - 8/5/16

Location S.E. ROCKFORD Date Mon 8/8/16  
 Project / Client AREA 4 ERH RA K&S: GWP-G5  
IEPA

0840 CDM Smith personnel (David Rojas) onsite @ Area 4. Already onsite is TRS personnel Brad Morris (just arrived also).

WEATHER: Sky = clear Wind 2-5 mph NE  
 Temp = 71°F Forecast = Temps in the loc to mid 80's w/ chance of rain = 0%

PPE: Modified Level D

Plan: TRS to continue installation of entrapment pipes & electrode caps on MPEs already installed and K&S to complete drilling & installation of GWP-G5 and move on to installing MPEs.

0845 David proceeded to CDM Smith / Bodine trailer to pick up supplies.

0900 David returned to the site. K&S personnel onsite Carlos Santana & Jack Zilz.

0920 Jeff Riffe (TRS) onsite.

0922 Brad conducted a K&S Tailgate Meeting w/ CDM Smith, TRS, and K&S personnel. K&S personnel are performing maintenance on Diedrich-120 drill rig and preparing to resume drilling @ GWP-G5.

0945 After changing 4.25" ID NSAs w/ water, resumed drilling. See PID Readings & Lithology on pg 116

David Rojas 8/8/16



Location S.E. ROCKFORD Date Mon 8/8/16  
 Project / Client AREA 4 ERH RA K&S GWP-G5  
IEPA

**LITHOLOGY & PID READINGS @ GWP-G5** <sup>Cont Sample 14</sup>

DEPTH (ft bgs)	PID (ppm)	LITHOLOGY
24.5-31	0.6-4.5	SAND, <sup>med</sup> grayish, yel brn, f-gm, m-gm moist becoming wet @ 30' bgs, no odor
31-37	302-255	SAND med brn greenish gray, f-gm gn strong, odor, wet, <sup>5' bgs</sup> stained
37-45	218-156	SAND med greenish gray, f-gm gn (coarsest than above) strong odor, wet, stained
45-47	210-133	SAND med greenish gray, f-gm gn (coarsest than above) strong odor, wet, stained

1030 Kevin Saller (CDM Smith) is onsite. David conducted a N&S Tailgate meeting w/ Kevin and Brad did a follow up N&S mtg w/ him too.

1032 K&S completed advancing HSAs to 47' bgs, lowered 1.75" AWJ rods in HSAs, no sediment encountered, used Moyno pump to flush HSAs, bumped wooden plug out of bot of HSA POA w/ rods, and began lowering SS materials of GWP inside HSAs. See pg 101 for general GWP construction details.

1105 K&S began pouring #4 silica / bluestone sand in HSAs and POH w/ HSA. After POH w/ 6th HSA, SS materials rose ~1.3' for 2' bgs. K&S was instructed by TRS to hammer down the SS materials using a 1.75" AWJ rod w/ CP as a weight so the top of SS materials = 2.30' bgs. <sup>APP 8/8/16</sup>

Location S.E. ROCKFORD Date Mon 8/8/16  
 Project / Client AREA 4 ERH RA K&S GWP-G5  
IEPA  
MPE-E5

1300 K&S continued POH w/ HSA while dumping #4 SD in HSAs. Brought #4 SD up to 14' bgs and shut down for lunch <sup>w/ 19.5' bgs</sup>

1315 All personnel left site for lunch

1415 All personnel returned to site from lunch

1418 K&S personnel began mixing neat cement <sup>6 94 10 bags Type I Portland + 36 gal H<sub>2</sub>O</sup> TRS personnel are preparing to install entrainment pipes in the "G" MPEs that have been installed. (G3, G4 & G5) See fieldbook maintained by Kevin Saller for details regarding entrainment pipes.

Specific Construction Details for GWP-G5

Top of SS materials = 2.30' bgs

Bottom of SS materials = 45.3' bgs

Screened Interval = 19.3-39.8 bgs

Top of Sandpack = 14' bgs

1515 K&S completed POH w/ HSAs while pumping grout in them to fill annulus. Required ~3/4 of mixed grout to bring grout to surface. Had to refill annulus 3 times after ~0.5 setting.

1545 K&S RD tower of D-120 and MIRU @ proposed location of MPE-E5 and prepare to advance 8.25" ID HSAs.

*(David P. Hayes)*  
 8/8/16



Location S.E. ROCKFORD Date Mon 8/8/16  
 Project / Client AREA 4 ERH K&S: MPE-E5  
IEPA

1555 K&S Advanced 8.25" ID HSA w/CP to 5' bgs @ proposed location of MPE-E5, then PCH w/ HSA & CP, installed wooden plugs in bit of HSA and resumed drilling

DEPTH ft bgs	PID (ppm)	Lithology
0-0.1	—	ASPHALT
0.1-0.8	0.0	Gravely SAND, med brn gray, F-m grw, dry, no odor, sli silty
0.8-1.5	0.4	Silty SAND, blk to dk dusky brn, F-grw w/ few m-grw, sli clayey, no odor, dry
1.5-2.0	0.1	Silty SAND, dk dusky brn, F-grw, sli clayey, dry to sli moist, no odor
2.0-3.0	0.0	Gravely SAND, med to dk yel brn, F-m grw, C-grw, sli to mod silty, dry, no odor
3.0-8.0	0.0	Silty SAND, med org brn, F-grw, dry to sli moist, no odor
8.0-14	0.5-0.1	SAND, med to med yel brn, F-grw, dry, no odor, sli silty
14-23	0.3	SAND, A.A except not silty
23-24.5	0.7-1.3	SAND, lt to med yel brn, F-grw w/ few to some m-grw, no odor, sli moist
24.5-29	1.8-5.3	SAND, A.A except sli clayey w/ depth
29-34	143-245	SAND, mod to med brn getting lighter w/ depth, F-m grw w/ med to mod clay, sli silty
34-37	324-284	SAND, med brn greenish gray, F-m to to few C-grw, wet, strong odor, stained
37-39.5	258-	SAND, AP, except to F-m gravel

1640 K&S ceased advancing HSAs @ 24.5' and began securing site in preparation to SDFN.

1705 David left site while TRS and K&S personnel are completing site securing.

David Rojas 8/8/16

Location S.E. ROCKFORD Date Tue 8/9/16  
 Project / Client AREA 4 ERH RA K&S: MPE-E5  
IEPA TRS: See Separate Fieldbook

0715 COM Smith personnel (David Rojas & Kevin Sallen) onsite. Already onsite are TRS personnel (Jeff Riffe & Ted Hightley) and K&S personnel (Carlos Santana & Jack Zitz)

WEATHER: Sky = Pth cldy Temp = 72°F Wind = calm

Forecast = Sndt Clouds w/ temps in the mid 80s

PPE = Modified Level D

Plan = K&S to complete MPE-E5 then move to and drill/install MPE-F5 & MPE-F4.

TRS to begin installing over sleeves & cutting/drilling air vent holes in entrainment pipe

NOTE: Kevin will maintain notes regarding all activities performed by TRS in a separate fieldbook.

0725 TRS conducted a H&S Tailgate Mtg. w/ COM Smith and K&S personnel. K&S performed rig safety & maintenance checks on their Friedrich-120 rig and prepared to resume drilling @ MPE-E5

0700 K&S resumed drilling w/ 8.25" ID HSA  
 0825 K&S completed advancing HSAs to 39.5 bgs and began lowering 4" black iron pipe of electrode in HSAs. See figure on pg 63 for general construction details.

David Rojas 8/9/16



Location S.E. ROCKFORD Date Tue 8/9/16  
 Project / Client AREA 4 ERH RA K&S: MPE-E5  
MPE-F5  
IEPA

0900 K&S completed adding  $3\frac{1}{2}$  graphite/shot mix while POH w/HsAs keeping at least 5' of mix in HsAs downhole until top of mix near the projected 23' bgs depth. Required 4.25 mixes to bring mix to 23' bgs then begin pouring #4 silica/bluestone in HsAs to set sandpack while completing POH w/HsAs.

0935 K&S completed POH w/HsAs. Required 33 50-lb bags of #4 silica/bluestone to bring top of sandpack to 0.5' bgs. Top of electrode = 0.71' ags. Wb = 27.42' b toe = 26.71' bgs

0940 K&S RD and MIRU @ proposed location of MPE-F5 and began advancing a hand auger to advance a pilot hole to 5 bgs to verify that location will miss subsurface gas line. Then advanced <sup>8.25' ER</sup> HSA w/CP to 5' bgs. See pg 121 For lithology & PID readings.

1010 Begin advancing HsAs. Wooden plug in bit of HSA.

1031 Chris Thomas (TRS) and (CTS) George Hytwynshyn are onsite.

1137 K&S completed advancing HsAs to 39.5' bgs and with assistance from TRS, started installing <sup>see pg. 63 for general details.</sup> ~~228~~ 8/9/16

Location S.E. ROCKFORD Date Tue 8/9/16  
 Project / Client AREA 4 ERH RA K&S: MPE-F5  
IEPA

LITHOLOGY & PID READINGS @ <u>MPE-F5</u>	
DEPTH (ft bgs)	PID (ppm)
0-0.1	—
0.1-0.5	0.1
0.5-1.3	0.0
1.3-2.5	0.2
2.5-3.5	0.1
3.5-6.0	0.5
6.0-8.0	135-1.4
8.0-18	0.4-0.6
18-26	0.3-0.7
26-28	8.7-18.9
28-33	89-133
33-37	249-208
37-39.5	153-255

1147 K&S w/assistance from Jeff Pffe (TRS) began dumping  $3\frac{1}{2}$  Graphite/Shot mix in HsAs and PU HsAs leaving at least 5' of mix in downhole HsAs. George left site.

1205 K&S have brought mix up to 22' bgs w/4.5 mixes and are going to fill downhole HsAs w/#4 silica/bluestone sand, pull another HSA, then go to lunch.

8/9/16



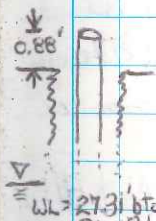
Location S.E. ROCKFORD Date Tue 8/9/16  
 Project / Client AREA 4 ERH RA K&S: MPE-E5  
MPE-E4  
IEPA

- 1220 All personnel left site for lunch break  
 1305 David returned to site. Keven is already back onsite awaiting return of TRS personnel to unlock site gate.  
 1325 Ted Hightley & Jeff Riffe returned to the site  
 1330 K&S personnel have returned to site and are loading the CME-85D track rig on a flatbed transport that just arrived onsite  
 1350 K&S resumed pouring #4 sand in NSAs and continued to POH w/HSAs keeping at least 7 feet of #4 sand in NSAs until reaching the last two NSAs.  
 1410 K&S completed POH w/HSAs. Required 31 50-lb bags #4 SD to bring sand to ~1' bgs. Stickup = 1.04' bgs  
 WL = 27.74' btoe = 26.70' bgs  
 1420 K&S advanced the 8.25" ID NSA w/CP to 5' bgs @ MPE-E4 after MIRU D-120. Then, POH w/NSA & CP, installed wooden plug in NSA bit and resumed drilling. See lithology & PID readings on pg 123. Charging HSAs with water after reaching 2.5' bgs.  
 1500 Brad Monier (TRS) onsite.

2 Days  
 8/9/16

Location S.E. ROCKFORD Date Tue 8/9/16  
 Project / Client AREA 4 ERH RA K&S: MPE-E4  
MPE-E4  
IEPA

- LITHOLOGY & PID @ MPE-E4 LOCATION
- | DEPTH (ft bgs) | PID (ppm) | LITHOLOGY   |
|----------------|-----------|---|
| 0-0.1          | -         | ASPHALT   |
| 0.1-0.5        | 0.1       | Gravelly SAND med to dk gray-bn, F-m grn, few c-gm, sli to med silty, dry, no odor                                |
| 0.5-1.0        | 0.6       | Silty SAND, dk to brn, F-grn w/ few m-gm, few gravel fine-sized, no odor, dry to sli moist, sli clayey (low clay) |
| 1.0-2.0        | 0.8       | Silty SAND, dk to brn, F-grn, grad to dk olive-brown, F-grn, m to c-gm, sli moist, no odor                        |
| 2.0-2.0        | 0.3       | Silty SAND, med to dk gray-bn mottled w/ med yel-bn, F-c gm, no odor, dry   |
| 3.0-18         | 0.1       | Silty SAND, lt yel-bn, F-grn, dry, no odor, bedding, less silty w/ depth  |
| 18-19          | 0.3       | Silty SAND, med yel-bn, F-grn, dry, no odor   |
| 19-25          | 0.1-0.8   | SAND, lt yel-bn, F-grn, sli silty, less silty w/ depth, dry, no odor  |
| 25-30          | 0.8-2.1   | SAND, F. A except not silty & few m-gm, moist, sli odor   |
| 30-32          | 49.8-155  | SAND, lt grayish brown, F-grn w/ few to some m-gm, moist to wet, coarse w/ med to strong odor                     |
| 32-37          | 246-316   | SAND, lt to med brn-gray grad to med grayish gray, F-grn w/ few to some m-gm, wet, strong, strong odor            |
| 37-39.5        | 308-411   | SAND, med grayish gray, F-m grn w/ few to fine gravel, stamled, wet, strong odor                                  |
- 1556 K&S have completed advancing HSAs to 39.5' bgs and after changing HSAs w/ TRS assisted in lowering 4" b/k non pipe of electrode inside HSAs. See pg. 163 for figure w/ general details for electrode construction. Specific details  
 4 Mixes of 3/1 Graphite/shot - 22' bgs  
 #4 silica/bluestone SD to lbs - 31 bgs  
 1650 K&S & RD and MIRU @ MPE-E4 location  
 David left site while TRS & K&S personnel SOFN 8/9/16





0720 COM Smith personnel (David Rojas & Kevin Salley) onsite @ Area 4. Already onsite: K&S personnel Carlos Santana & Jack Litz and TRS personnel Jeff Riffe and Ted Higley.

Weather = Temp = 74°F Sky = mostly cloudy  
Wind = Calm Forecast = clearing sky and temps in the high 80s to low 90s

PPE = Modified Level D

PLAN - K&S will work on installing the 4 remaining MPEs on the property & TRS will install entrapment pipes & electrode caps on the 3 MPEs installed yesterday.

0725 TRS conducted a H&S Tailgate Mtg w/ COM Smith and K&S personnel. Then, K&S personnel made preparations to begin drilling @ MPE-F4.

0738 K&S began drilling @ MPE-F4 by advancing 8.25' ID HSA w/CP to 5' bgs, then POH w/Ds installed wooden plug in HSA and resumed drilling. See pg 125 for lithology & PID readings.

0810 Checked calibration of TRS's PID. 100 ppm cal gas reads 117 ppm.

0905 K&S have completed advancing HSAs to 40' bgs & begins installing 4" blk iron pipe & 3:1 Graphite/shot mix. Same procedure as other "F" electrodes. 8/10/16

LITHOLOGY & PID READINGS @ MPE-F4		
DEPTH (ft bgs)	PID (ppm)	LITHOLOGY
0-0.1	-	Asphalt
0.1-1.0	0.0	Gravelly SAND, dk red brn mottled w/ dk brn F-c gw sli to mod silty, dry no odor
1.0-2.0	0.3	Silty SAND, dk dusky, brn gray to dk brn sli to mod clayey, fls plasticity, sli greenish decrease w/ depth, F-gw, sli moist, no odor
2.0-2.5	0.1	Gravelly SAND, dk red brn, F-c gw, sli clayey, dry, no odor
2.5-3.0	0.0	Silty SAND, med org brn, F-gw, dry no odor
3.0-7.0	0.2	Silty SAND, lt yel brn, F-gw, dry no odor
7.0-10	0.1	Silty SAND, lt to med greenish yel brn, F-gw, dry, no odor
10-22	0.1	SAND, lt yel brn, F-gw, dry, no odor
22-28	0.2	SAND, lt to med yel brn F-gw w/ few m-gw, dry to sli moist, no odor
28-30	0.2	SAND, med greenish brn, F-gw, wet to some m-brn, moist to wet no odor
30-34	0.4-31	SAND, mod brn gray, F-m gw w/ c-gw, sli. mod odor, wet
34-37	55-81	SAND, med greenish gray, F-m gw w/ c-gw, mod odor, wet, stained
37-38	153-104	SAND, lt to med greenish gray, F-m gw w/ some c-gw, mod strong odor, wet
38-40	189-238	SAND, med to dk greenish gray, F-m gw w/ some coarse, red F-c gravel, stained, strong odor, wet

0945 K&S completed pouring 3:1 Graphite/shot mix in HSAs while PU HSAs to 25' bgs. Required 4.25 mixes to bring conductive material (CM) to 22.5 bgs. Required 31 50-lb bags of #4 silica/bluestone sand to bring sandpack to 0.5' bgs. See figure on pg 63 for general construction details. 8/10/16



Location S.E. ROCKFORD Date Wed 9/10/16  
 Project / Client AREA 4 ERH RA K&S: MPE-FH  
IEPA MPE-E3

1015 K&S completed POH w/HASAs @ MPE-FH after constructing sandpack. Specific Construction details:

Top of Electrode = 0.62' ags  
 WL = 27.15' btoe = 26.53' bgs

1024 K&S RD D-120 and MIRU @ proposed location of MPE-E3 and prepare to advance 8.25" ID HASAs using same procedure as at other "E" MPEs.

### LITHOLOGY & PID READINGS @ MPE-E3

DEPTH (ft bgs)	PID ppm	LITHOLOGY
0-0.1	—	ASPHALT
0.1-0.8	0.4	GRAVELY SAND med to dk brn gray, mottled w/lt orange & yel brn, F-c gms, no odor
0.8-2.0	0.3	SILTY SAND, blk to dk dusky brn, F-gm, sh to med clayey, dry, no odor
2.0-2.5	0.1	GRAVELY SAND, dk brn, F-c gm, dry, no odor
2.5-3.0	0.3	SILTY SAND, dk red brn, F-gm, sh, clayey (lo plas), dry, no odor
3.0-3.5	0.1	SILTY SAND, med org brn, F-gm, tr-few mgm, dry, no odor
3.5-5.0	0.4	SILTY SAND, med to lt yel brn, F-gm, dry, no odor, lighter w/depth
5.0-8.0	0.1	Silty sand, med clayey, F-gm, dry, no odor
8.0-18	1.0-0.4	SAND, grayish lt yel brn, F-gm, sh, silty / coarse, dry, no odor
18-26	0.7-0.3	SAND, A.A. except F-gm w/ few mgm, becoming more silty w/ depth, no odor
26-32	0.4-22	SAND, med grayish brn, F-gm, to some mgm, no odor, wet
32-36	48-89	SAND, med brn gray, grad to greenish gray, F-mgm, to c-gm, wet, strong odor
36-38	178-233	SAND, med greenish gray, F-mgm, to some c-gm, wet, strong odor, stained
38-40	332-255	SAND, A.A. few F-c gms, except med to dk gray, dry

Location S.E. ROCKFORD Date Wed 9/10/16  
 Project / Client AREA 4 ERH RA K&S: MPE-E3  
IEPA

1130 K&S have advanced HASAs to 2.5' bgs and secured site in preparation to break for lunch.

1210 CDX Smith personnel returned to site

1230 TRS personnel returned to site

1245 K&S personnel returned to site and resumed drilling @ MPE-E3

1330 K&S completed advancing HASAs to 40' bgs and began installing 4" dia blk iron pipe of electrode using the same procedure as the other MPE installed yesterday & today. See figure on pg 63 for general construction details. Specific Details re: Construction of MPE-E3

# of 3:1 Mixes of graphite/shot = 4

Top of 3:1 Graphite/shot Mix = 21.8' bgs

# of 50-lb bags of silica/dustee = 31.5

Top of sandpack =

Top of electrode = 0.90' ags

WL = 27.21' btoe = 26.31' bgs

1435 K&S completed POH w/HASAs, clean area, RD, MIRU D-120 @ proposed location of MPE-E3, and prepare to drill using 8.25" ID HASAs using same method as MPE-F4. See page 12B for lithology and PID.

David Rojas 9/10/16



S.E. ROCKFORD

Wed 8/10/16

AREA 4 ERH RA K&S: MPE-F3  
IEPA

## LITHOLOGY &amp; PID READINGS @ MPE-F3

DEPTH (ft bgs)	MD ppm	
0-0.1	—	ASPHALT
0.1-1.0	18.8	Gravely SAND, dk gray mottled w/ dk bn f-c grm, dry, slt to med silty, silty clay
1.0-2.5	9.5	Gravely, silty SAND, blk gray to dk dkish brn fgm w/ few m-c grm, slt to med clayey (lo phs) silty
2.5-3.5	4.1	silty SAND, dk red brn f-gm / few m-grm slt clayey (lo phs), dry to silty med, no odor
3.5-4.0	3.5	silty SAND, med crs blk, f-gm, dry, no odor, tr f-gravel
4.0-12	4.7-0.6	silty SAND, lt yel brn f-gm, dry, tr- no odor, becoming less silty w/ depth
12-25	0.4-56*0.0	SAND, lt yel brn f-gm, dry, no odor slt silty, Highest PID = 5.6 @ 23 bgs
25-29	0.4-0.8	SAND, grayish lt yel brn, f-gm, med no odor
29-33	0.9-1.2	SAND, grayish lt yel brn mottled w/ med brn f-gm w/ few m-grm, silty clay, wet, stinky
33-35	33-49	SAND lt grayish yel brn gray to med brn f-m grm, med-stinky odor, wet, stained
35-38	125-111	SAND, med greenish gray f-m w/ tr-few c-grm & tr fine gravel, wet, stained, stinky odor

1540 Brad Morris (TRS) onsite.

1620 K&S has advanced HSAs to 25 bgs @  
proposed location of MPE-F3. Ceased  
advancing HSAs and begin securing  
site and maintaining equipment in  
preparation for SDFW.1635 David Rojas left site in route to pickups  
supplies and return to the hotel to begin  
working on Daily Activity Report.38-40 245-134 SAND, med greenish gray A.A. except some  
c-grm & few f-c gravel  
David Rojas 8/10/16

S.E. ROCKFORD

Thur 8/11/16

AREA 4 ERH RA K&S: MPE-F3  
IEPA0715 Con Smith personnel (David Rojas)  
on site @ Area 4. Already onsite are TRS  
personnel: Brad Morris, Ted Hightley, & Jeff  
Riffe and K&S personnel: Carlos Santana  
and Jack Zilz.WEATHER CONDITIONS: Temp = 76°F Wind = 3-8 mph  
Sky = Clear w/ slt fog. Forecast = possible  
scattered showers in P.M. and temps  
to climb into the mid 90s.

PPE: Modified Level D

Plan: K&S to install the 2 MPEs left inside  
the property fence (F3 & G2) then  
possibly the VPor TMP left in this  
area. (Probably won't complete installation  
of the 2 CWP's in this area this week  
if thunderstorms forecast for tomorrow  
come to fruition.0720 TRS conducted H&S Tailgate Mtg w/  
CDMSmith & K&S personnel. Then,  
K&S personnel made preparations to  
resume drlg @ MPE-F3. See table on  
pg. 128 for lithology & PID readings.0742 K&S resumed drilling, changing auger w/ water  
@ each connection.David Rojas  
8/11/16



Location S.E. ROCKFORD Date Thur 8/11/16  
 Project / Client AREA 4 ERH RA K&S: MPE-F3  
IEPA MPE-G2

0820 Kevin Saller (CDM Smith) onsite.  
 K&S completed advancing H&As to 40' bgs  
 @ MPE-F3 location and began installing  
 4" b/k iron electrode using the same procedure  
 used the past couple of days. See fig.  
 on pg 63 for general construction details.  
 Specific details re: construction of MPE-F3:

- # of 3:1 Mixes of Graphite/Shot  
 used prior to beginning to POH w/ H&A = 2.5
- # of 3:1 Mixes used to bring 3:1 Graphite/  
 shot to 23.0' bgs = 4.75
- # of 50 lb bags of #4 silica/bluestone sand  
 used to bring sandpack to 0.5' bgs = 35
- Top of electrode = 0.82' ags
- Wh inside electrode = 27.20' stee = 26.38 bgs

0945 K&S POH w/ lead H&A, RD and clean  
 up location, MIRU @ MPE-G2 and  
 prepare to advance 8.25" ID H&As  
 to 40' bgs using same procedures used  
 @ other "G" MPEs. See lithology & PID readings  
 in table on pg 131.

1120 K&S advanced H&As to 25' bgs and SD  
 for lunch break. All personnel left site @ 1124.

1205 CDM Smith personnel returned to site.  
 1225 TRS personnel (Brad & Jeff) returned to site  
 1244 K&S personnel returned to site and resumed drlg.  
 David Rojas 8/11/16

Location S.E. ROCKFORD Date Thur 8/11/16  
 Project / Client AREA 4 ERH RA K&S: MPE-G2  
IEPA

# LITHOLOGY & PID READINGS @ MPE-G2

DEPTH (ft bgs)	PID (ppm)	LITHOLOGY
0-0.1	—	ASPHALT
0.1-0.5	0.1	Gravelly SAND, med brn mottled w/ dk brn, F-grw, dry, sli to med silty, no odor
0.5-2.0	0.3	Gravelly Clayey SAND, b/k to dk dusky brn, dry, F-m grw, few C-grw, finer, less grav w/ depth, no odor
2.0-2.5	0.1	Gravelly Silty SAND, dk red brn, F-grw, dry to sli moist, sli clayey (low plasticity), no odor
2.5-3.0	0.0	Silty SAND, dk red brn, F-grw, dry, sli clayey (low plasticity), no odor
3.0-4.0	0.4	Silty SAND, med org brn, F-grw, dry, no odor
4.0-5.0	0.3	Silty SAND, lt yel brn, F-grw, dry, no odor
5.0-6.0	0.1	Silty SAND, med yel brn mottled w/ dk brn, dry, no odor, F-grw, sli silty
6.0-12	1.5-0.4	SAND, lt grayish yellow, F-grw, dry, no odor
12-27	0.3-0.5	SAND, lt yel brn, F-grw, dry, no odor, become more plastic w/ depth
27-33	0.4-0.1	SAND, lt med grayish yel brn, F-grw, w/ few m-grw, med to wet, no odor
33-36	0.0-0.4	SAND, med yel brn gray, F-m grw, wet, no odor
36-38	0.0-0.3	SAND, med grayish yel brn, F-m grw, w/ to few botone, wet, no odor
38-40	0.5-0.0	SAND, A.A w/ F-m sized gravel inc w/ depth

1315 K&S completed advancing H&As @ MPE-G2  
 location to 40' bgs and began installing  
 4" dia b/k iron pipe of the electrode followed  
 by a bag of shot then 3:1 Graphite/shot  
 mix and then #4 silica/bluestone sand.  
 See figure on pg 63 for general construction  
 details.

David Rojas  
 8/11/16



Location S.E. ROCKFORD

Project / Client

AREA 4 ERH RA  
IEPA

Date

Thur 8/11/16  
K&S: MPE-G2  
VP-G4Specific details re: Construction of MPE-G2:

- # of 3:1 Mixes of Graphite/Shot placed in HSA prior to beginning to POH = 2.25
- # of 3:1 Mixes of Graphite/shot used to bring top of Mix to 22.7' bgs = 4.25
- # of 50-lb bags of #4 silica/bluestone sand used to bring sandpack to 0.5' bgs = 32
- Top of electrode = 0.83' ags
- WL inside electrode = 27.23' btoe = 26.40' bgs

1400 K&S completed POH w/ 8.25 ID HSA, RD, MIRU @ proposed loc. of VP-G4, advance 4.25" ID HSAs w/CP to 5' bgs, POH w/ HSA & CP, install wooden plug in bit of HSA, resume drilling.

1440 K&S completed advancing HSAs to 15' bgs lowered VP materials <sup>14.0' log</sup> on HSAs, bumped out wooden plug, dumped 5 bags of #4 silica/bluestone sand bringing sandpack to 7.5' bgs. Top of VP = 0.75' ags. See figure on pg 81 for general construction details. Screened interval = 10.79-13.29

1500 K&S mixed neat cement: 5 94-lb bags Type I Portland cement w/ 25 gallons water. Used all but ~15 gallons. TRS used remaining cement to set oversleeves of <sup>FIVE</sup> MPEs (See Kevin's notes).  
<sub>David Rojas 8/11/16 for details</sub>

Location

S.E. ROCKFORD

Project / Client

AREA 4 ERH RA  
IEPA

Date

Thur 8/11/16  
K&S: TMP-F4

1540 K&S MIRU D-120 drill rig and begin advancing 4.25" ID HSA w/CP down to 5' bgs @ proposed loc. of TMP-F4. After advancing the HSA w/CP to 5' bgs, K&S POH w/ Drill String (DS), install a wooden plug in the bit of the lead HSA, then resumed drilling.

1615 K&S are drilling @ 15' bgs @ the proposed location of TMP-F4 and have confirmed w/ TRS personnel that they will cease advancing the HSAs @ 25' bgs and SDFN.

1620 David left the site en route to hotel to begin writing today's Daily Activity Report while Kevin oversaw K&S drill the next 10'. See Kevin's fieldbook notes for details regarding shut down activities and timing, and all non-drilling activities performed by TRS personnel today.

David Rojas  
8/11/16



Location S.E. ROCKFORD Date Fri 8/12/16  
 Project / Client AREA 4 ERH RA K&S: TMP-FH  
IEPA

0705 CDM Smith personnel (David Rojas & Kevin Saller) onsite @ Area 4. Already onsite TRS personnel (Brad Morris & Jeff Riffe)  
 WEATHER: Temp = 72°F Wind = Calm Sky = Overcast w/drizzle Forecast = Rain w/occasional thunderstorms. Temperature to be in low 80's  
 PPE: Modified Level D  
 PLAN: K&S to complete installation of TMP-FH and assist TRS in grouting the overleaves @ MPEs where overleaves haven't been grouted.

0710 CH<sub>2</sub>M Hill representative Jim Malison is onsite w/Terra Probe personnel placing IDW (lexane sleeves, decon water, soil cuttings & soil impacted from a hydraulic oil spill) in drums being stored onsite. IDW was generated on a separate S.E. Rockford Superfund Site. Already onsite for K&S: Jack Zilz.

0736 Carlos Santana (K&S) arrived onsite.

0740 TRS conducted H&S Tailgate mty then K&S resumed advancing HSAs @ TMP-FH.

0805 K&S completed advancing HSAs to 39' bgs and began mixing neat cement. 5 bags of Portland Type I cement + 30 gal H<sub>2</sub>O using 2 55-gal drums & Moyno pump of drilling rig.

Location S.E. ROCKFORD Date Fri 8/12/16  
 Project / Client AREA 4 ERH RA K&S: TMP-FH  
IEPA

0845 K&S lowered 1.75" dia AWTrads inside HSAs @ tagged wooden plug @ 39' bgs, charged HSA w/water then bumped plug and POAs w/rods then lowered 1.25" dia copper pipe of TMP in HSAs, sweating (soldering) couplers between the two 20' sections. See figure on pg 79 for general construction details.

0900 Drizzle has become a constant light rain. Fencing company is delivering additional sections of temporary fencing. K&S filled HSAs w/heat cement and then began POH w/HSAs keeping the downhole HSAs full of cement between disconnections.

0910 After POH w/3 5' long HSAs and finishing pumping both batches of neat cement, mixed another batch of 4.5 bags + 25 gal. Then mixed a 4th batch of 5 bags + 30 gal after POH w/2 more HSAs and continued filling downhole HSAs while POH w/HSAs. Used all but ~10 gal of grout to bring top of cement to surface.

1020 K&S and TRS personnel are securing site in prep. For leaving for the weekend break.

1030 David left site in route to hotel to write Daily Activity Report. 8/12/16





Location S.E. ROCKFORDProject / Client AREA 4 ERH RA  
IEPADate Mon 8/15/16  
K&S: GWP-E3

0915 CDM Smith personnel (David Rojas & Kevin Saller) onsite @ Area 4. Also onsite are Carlos Sontana & Jack Zilz (K&S) and Ted Highley (TRS)

WEATHER: Temp = 76° Wind = Calm  
Sky = Partly Cldy Forecast for temp to get to the mid 80s & a chance for rain.

PPE: Modified Level D.

PLAN K&S to install groundwater piezometer GWP-E3 and GWP-F3; TRS to inventory supplies & grant more overshoes.

0930 TRS conducted a H&S meeting w/ K&S and CDM Smith personnel.

0940 Tim Black (TRS) onsite

0950 K&S have MIRU Diedrich 120 (D-120) @ proposed location of GWP-E3, advanced 4.25" ID HSA w/ Cement Plug (CP) to 5' bgs. POH w/ Drill String (DS), installed wooden plug in bet of HSA, and resumed drilling.

1100 K&S have completed advancing HSAs to 47' bgs (changing HSAs w/ water between connections since 25' bgs). Highest PD reading was 145 ppm @ 37' bgs. PID reading of cuttings brought to surface @ Total depth was 85 ppm. K&S lowered 1.75" AWT rods to 43' bgs and prep to jet HSAs & bump plug.  
David Rojas 8/15/16

Location S.E. ROCKFORDProject / Client AREA 4 ERH RA  
IEPADate Mon 8/15/16  
K&S: GWP-E3

1125 After replacing a ball valve on Moyno pump on rig (~10 min), flushed HSAs w/ water (No materials to surface), bumped wooden plug and pulled out of hole (POH) w/ rods. Then lowered SS GWP materials inside HSAs, held SS materials @ 45' bgs dump 1/2 50-lb bag of #4 silica/bluestone sand to backfill HSAs from 47'-45' bgs and attempt to begin POH w/ HSA while holding SS materials down by wedging a 5' long, 1.75" dia AWT rod between SS materials and dived head of D-120

1210 K&S abandoned attempt to POH w/ HSAs because SS materials pull up w/ HSAs (bridged?).

1215 POH w/ SS materials, lowered 1.75" AWT rods to 47' bgs jetting HSAs w/ water. Then pulled out the HSA rods → POHs w/ rods and lower SS materials inside HSAs. SS materials are sitting @ ~2' to 45.5' bgs so resumed attempt to construct sandpack while POH w/ HSAs. See fig. on pg 100 for general construction detail.

1230 Brad Morris (TRS) arrived onsite.

1410 K&S has picked up (PU) HSAs to 19' bgs #4 sand is @ 18' bgs in HSAs. Total bags of #4 sand added so far = 15. Break for lunch.

David Rojas 8/15/16



Location S.E. ROCKFORD Date Mon 8/15/16  
 Project / Client AREA 4 ERH RA K&S: GWP-E3  
IEPA GWP-F3

1500 Com Smith personnel returned to site from lunch break. Already back on site are all 3 TRS personnel.

1515 K&S personnel returned to site and resumed constructing sandpack of GWP-E3 while PU & H&Ss. After a total of 16 50# bags of #4 silica/bluestone sand, top of sand is @ 16' bgs. Top of SS materials are 2.6' ags so screen is @ 19.0'-39.5' bgs and bottom of SS material = 45.0' bgs

1545 K&S began mixing neat cement in 55-gallon drums using Moyno pump on drill rig. Each drum = 5.5 94-lb bags of Type I Portland + 30 gal water.

1645 K&S completed grouting from surf to 16' bgs @ GWP-E3 w/ ~50 gallons of grout. TRS used remaining grout to grout oversleeves of several MPEs (See Kevin's notes for details).

1715 K&S RD D-120 and MI @ revised location of GWP-F3 (moved 1' east so tower will be 10' feet from powerline).

1735 K&S personnel are cleaning & securing equipment in preparation to SDFN.  
 1740 David Rojas left site en route to hotel. 8/16

Location S.E. ROCKFORD Date Tue 8/16/16  
 Project / Client AREA 4 ERH RA K&S: GWP-F3  
IEPA

0715 Com Smith personnel (David Rojas & Kevin Sailer) on site @ Area 4. Also on site K&S personnel - Carlos Santana & Jack Zilk and TRS personnel - Brad Morris, Ted Higley, and Tim Black.

WEATHER: Temp = 72°F Sky = clear Wind = 1-3 mph SW. Forecast = possible scattered rain showers in afternoon w/ temp = 80s

PPE = Modified Level D

PLAN = K&S to install GWP-F3 then move D-120 into Marshall St. and resume installation.

0725 TRS personnel conducted a H&S Tailgate Mtg w/ Com Smith & K&S personnel

0738 K&S began advancing 4.25 ID HSA w/ CP to 5' bgs for pilot hole @ GWP-F3. Then, POH w/ drill string (DS), put wooden plug in HSA, and resume drilling (changing H&Ss w/ water between connections once reaching 25' bgs).

0900 K&S completed advancing H&Ss to 47' bgs, lowered 1.75" dia AWT rods to 47' bgs, changed H&Ss w/ water, bumped wooden plug <sup>POH w/ rods</sup> & removed SS GWP materials inside H&Ss after slowly dumping ~ 1/2 bag of #4 silica bluestone sand.

David Rojas 8/16/16



Date Tue 8/16/16

K&amp;S: GWP-F3

## LITHOLOGY &amp; PID @ GWP-F3

DEPTH (ft bls)	PID (ppm)	LITHOLOGY
0-0.1	—	ASPHALT
0.1-2.0	0.0	Gravelly Clayey Sand, dk dusky brn, F-m gn, clayey high plas, sli moist, no odor
2.0-2.5	0.0	Gravelly Silty Sand, med yel brn mottled w/ dk brn, F-gm, sli clayey, H plas, sli moist, no odor
2.5-3.5	0.0	Silty SAND, lt to med org brn, F-gm, dry no odor
3.5-9	0.0	Silty SAND, lt yel brn, F-gm, dry, no odor
9-18	0.1	SAND, lt yel brn, F-gm, sli silty dry, no odor
18-21	0.4-0.2	SAND, lt to med yel brn, F-gm / Few m gn, dry, no odor
21-24	0.1-0.2	SAND, lt yel brn, F-gm, dry, no odor
24-33	0.2-0.4	SAND, lt to med grayish yel brn, F-gm w/ few to some m-gn, dry, becoming moist w/ depth
<del>30-33</del>	<del>0.4-0.6</del>	<del>SAND, A.A. except F-m gn, wet</del>
33-35	9.4-2.1	SAND, A.A. except sli to med clayey becoming clayey & more colorful w/ depth
35-41	48-85	SAND, med brn gray, F-m gm, wet stained, med to strong color
41-45	119-104	SAND, A.A. except to a few c-gm, strong color
45-47	87-73	SAND, A.A. except, few to some c-gm & Tr rounded F-m gravel, spotty staining w/ few Increased coarseness w/ depth Grading to lt to med grayish yel brn w/ depth

0930 K&S began POH w/ HSA's while slowly  
dumping #4 silica/bluestone sand inside  
XSA's to construct sandpack of GWP-F3.

1110 K&S have PU the DS to 15' bgs & top of  
sandpack is @ 16' bgs. A total of 19  
50-lb bags of #4 sand was used.

David Rojas 8/16/16

Date Tue 9/16/16

K&S: GWP-F3  
VP-D4

1135 CDM Smith & K&S personnel left for lunch break  
while TRS personnel secure site.

1205 CDM Smith personnel returned to site

1218 TRS personnel returned to site

1230 K&S personnel returned to site and began  
mixing neat cement using 94-lb bags of  
Type I Portland cement, 60 gal water in  
2 drums using the rig's Moyno pump.

1350 K&S completed mixing neat cement, pumped  
cement in downhole HSA's and resealed  
POH w/ HSA keeping the downhole HSA's filled  
w/ cement until POH.

1405 K&S completed POH w/ HSA's after bringing  
cement to ~~surface~~ surface after pumping  
in ~6 bags worth of cement (~55 gal)  
Specific Details regarding construction of GWP-F3

Material in  
GWP-D37'

Top of SS Material = 2.06' abs

Bottom of SS Material = 45.54' bgs

Screen Interval = 19.54' - 40.04' bgs

1435 K&S RD D-120 and MRU @ proposed  
location of VP-D4, advanced a hole through asphalt  
w/ 4.25" ID HSA, advanced a pilot hole w/ hand auger  
to 5' bgs to verify subsurface utility clearance.

1547 K&S completed hand augering to 5' bgs (limerock  
backfill to 4.3' bgs & dk brn grayish Sand from  
4.3-5.0' bgs. — David Rojas 8/16/16



Location S.E. ROCKFORDDate Tue 8/16/16Project / Client AREA 4 ERH RAK&S: VP-D4TMP-D3IEPA

1550 K&S began advancing 4.25" ID HSA w/CP @ proposed loc. of VP-D4. Advanced to 5' bgs, POH w/DS, install wooden plug in bit of HSA, resume advancing HSA's

1605 K&S completed advancing HSA's to 15' bgs, reamed hole then POH w/HSA's, lower VP materials (pre-assembled) holding it @ 15' bgs. the bottom is @ ~13' bgs and planned to bring silica/bluestone sand to bring top of sandpack to 8' bgs (See general construction details & figure on pg 81 - except neat cement will only be brought up to ~4' bgs)\*

\* NOTE: TRS cut the top of VP off after grouting

1655 K&S mixed 2 94-lb bags of Type I Portland cement w/ 10 gal water and poured 3/4 of mix in borehole to bring top of grout to 4' bgs

1705 K&S RD and MIRU @ revised location of TMP-D3 (move location 1' west to be 10' west of overhead electrical (OE) line),

cut hole in asphalt w/ 4.25" ID HSA's, advanced hand auger to 5' bgs to clear utilities, advanced HSA's w/CP to 5', POH w/DS, install wooden plug on HSA & resume drilling to 24.5' bgs. (stopping above WT for the day)

1800 K&S ceased drilling @ 24.5' bgs and SDFM.  
1810 David & Kevin left site in route to hotel. 8/16/16

0-4' Low Rock  
4-15' Gravelly  
SD

Location S.E. ROCKFORDDate Wed 8/17/16Project / Client AREA 4 ERH RAIEPA

0710 CDM Smith personnel (David Rojas & Kevin Saller) onsite @ Area 4. NOTE - Kevin is maintaining a separate fieldbook w/ notes regarding activities performed by TRS. Already onsite: TRS personnel: Brad Morris, Ted Highley, & Tim Black. Brad stated that K&S personnel have been detained offsite due to equipment problems, but should be arriving shortly. WEATHER: Temp = 72°F Wind = 2-5 mph Sky = pty cloudy. Forecast = chance for morning & afternoon brief showers or thunderstorms and temperatures in the mid 80s.

PPE: Modified Level D

Plan: K&S to continue drilling @ the TMP-D3 loc. and install this TMP then move to and install other apparatus in Marshall Street.

0725 Brad informed CDM personnel that K&S personnel will be delayed and that he has spoken w/ the woman across the street (Marshall St) and got permission to trim the branches that impede the installation of the "B" Electrodes. Brad is still waiting to hear back from Wolf Bros Tree Service. 8/17/16



Location S.E. ROCKFORD Date Wed 8/17/16  
 Project / Client AREA 4 ERHRA K&S: TMP-D3  
IEPA

- 0935 K&S personnel Carlos Santana & Jack Zilz arrived onsite.
- 0945 TRS conducted a N&S Tailgate Mtg w/ K&S and COM Smith personnel
- 0950 K&S resumed drilling @ revised location of TMP-DS w/ 4.25" ID HSAs after changing HSAs w/ water. K&S had advanced HSAs to 24.5' bgs yesterday. P.O. readings:
- |          | (PPM) |
|----------|-------|
| 25 - 145 |       |
| 30 - 145 |       |
| 35 - 348 |       |
| 37 - 308 |       |
| 39 - 247 |       |
- 1027 K&S completed advancing HSAs to 39' bgs, lowered copper pipe of TMP in HSAs, 30' bgs connectors. Also, John Grabs (COM Smith) arrived onsite. Top of TMP copper pipe @ ~1' ags
- 1046 K&S began mixing neat cement using 25 gal water & 4.5 94-lb bags of Type I Portland cement and mix w/ drill wisk
- 1150 K&S pumped the mixed grout in the HSAs and began POH w/ HSAs. After POH w/ 10' of HSAs, mix another batch of grout (same volumes) using Moyno pump of rig & pumped into HSAs and POH w/ 5' HSA then mix another batch of grout (same volumes) using Moyno pump. After pumping 3rd batch & POH w/ 15' of HSAs, top of cement (TOC) = 7' bgs. and falling.

Location S.E. ROCKFORD Date Wed 8/17/16 145  
 Project / Client AREA 4 ERHRA K&S: TMP-D3  
IEPA MPE-C2

- 1255 K&S began mixing 4th batch of grout (10 gal water + 2 94-lb bags of Type I Portland cement) using Moyno pump.
- 1315 K&S completed pumping grout in annulus and POH w/ HSAs. TOC = 4' bgs (Total # of bags of Portland used = 15.5 bags)
- 1330 COM Smith personnel left site for lunch break while K&S and TRS personnel secured the site.
- 1420 COM Smith personnel (David Rojas & Kevin Saller) returned to site. All K&S and TRS personnel are offsite and gate locked.
- 1438 K&S and TRS personnel returned to site.
- 1450 K&S MIRU D-120 @ revised location of MPE-C2 (moved 5' north of original proposed location due to overhead cable TV wires). Used 8.25" ID HSA to cut hole in asphalt and advance handauger to 5' bgs to verify subsurface utility clearance then began advancing 8.25" HSA w/ CP.
- 1600 After advancing HSA to 3.5' bgs, appeared to encounter a pipe. POH w/ HSA and exposed a 1.5" dia steel pipe running E-W @ the south edge of the borehole. Did not appear to have damaged the integrity of the pipe.



Location S.E. ROCKFORD Date Wed 8/17/16  
 Project / Client AREA 4 ERHRA K&S: MPE-C3 RRR  
IEPA

# LITHOLOGY & PID READINGS @ MPE-C3

DEPTH (FT bgs)	PID (ppm)	LITHOLOGY
0-0.4	—	Asphalt
0.4-4.0	0.0	Limerock - roadbase
4.0-5.0	0.0	Gravelly Silty SAND, med yel brn, f-grm, dry no odor, sli clayey (to ppt)
5.0-6.5	0.0	Silty SAND, lt to med pinkish brown, f-m grm, sli clayey, no odor, dry
6.5-7.5	0.0	Silty SAND, med yel brn, f-grm, some f-m gravel, dry, no odor
7.5-24	0.4-0.0	SAND, lt yel brn, f-grm, med silty, dry no odor, becoming less silty w/depth
24-32	0.6-0.3	SAND, A.A. except silty & few m-grm coarsening w/depth, lt to med grayish brown f-grm, dry becoming sli moist w/depth to 30 bgs then moist to wet, no odor
32-34	8.7-47.8	SAND, lt to med grayish brown, f-m grm sli - med odor, fxt
34-37	70.9-	SAND, med brn gray, f-m grm, f to f-m e-grm, med odor, fxt, more dk minerals than above
37-40	198-202	SAND, A.A. except stained, few to some c-grm strong odor, f-p reading from bottom of HSA

1650 K&S backfilled the borehole advanced @ MPE-C2 with  
 the cuttings and back rig to proposed loc. of  
 MPE-C3, cut hole in asphalt w/ 8.25" ID HSA  
 and advance pilot hole to 5 bgs w/ post-hole digger  
 hand auger & probing rod.

1810 Cleared hole to 5.5 bgs, and advanced 8.25"  
 ID HSA to 5' bgs and SDFN.

1835 CDM Smith personnel left the site while  
 K&S and TRS personnel were securing  
 the site.

The manufacturers of *Rite in the Rain* all-weather writing products are grateful to the numerous environmental experts who have contributed to the development of this book. Should you have any additions, improvements or corrections for future publications of this field book or have suggestions for other environmental field book formats, we welcome your input.

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## Common Field Data Error Codes

Error codes are used to explain common mistakes and are written above or close to the mistake.

Commonly used error codes include:

RE	Recording Error
CE	Calculation Error
TE	Transcription Error
SE	Spelling Error
CL	Changed for Clarity
DC	Original Sample Description Changed After Further Evaluation
WO	Write Over
NI	Not Initialed and Dated at Time of Entry
OB	Not Recorded at the Time of Initial Observation

Note: Error code should be circled, dated, and initialed when recorded.

## Hazard Classifications

- Class 1 Explosives
- Class 2 Gas
- Class 3 Flammable Liquid
- Class 4 Flammable Solids (Potential spontaneous combustion, or  
emission of flammable gases when in contact with water)
- Class 5 Oxidizing Substances and Organic Peroxides
- Class 6 Toxic (poisonous) and infectious substances
- Class 7 Radioactive material
- Class 8 Corrosives
- Class 9 Miscellaneous dangerous goods

## Container type abbreviations (for sampling guidelines)

BR - Boston Round • ABR - Amber Boston Round • AJ - Amber Jug •  
 AWM - Amber Wide Mouth • Poly - Polyethylene Bottles • BOD - Bottle •  
 CWM - Clear Wide Mouth



4 Location S.E. ROCKFORD Date Mon 8/8/16  
Project / Client AREA 4 ERH RA TRS  
IEPA

1030: KEVIN SAUER ONSITE AREA 4,  
DAVID ROJAN + TRS ALREADY ONSITE  
WEATHER: CLEAR SKY, SLIGHT BREEZE,  
78°F, FORECAST = MID 80'S

PPE: MODIFIED LEVEL D

PLAN: TRS TO CONTINUE INSTALLATION  
OF ENTRAINMENT PIPES + ELECTROPE  
CAPS ON MPES ALREADY INSTALLED  
AND KES TO COMPLETE DRILLING  
+ INSTALLATION OF GWP-GS + MOVE  
ON TO INSTALLING MPES.

10:35: HES OVERVIEW WITH BRAD  
MORRIS (TRS) + DAVID (CDM SMITH)

11:30: BEGIN PLACING SAND IN GWP-GS.

13:15: TRS, KES, CDM SMITH OFFSITE  
FOR LUNCH

14:15: ALL PERSONNEL BACK ONSITE

14:32: KES MIXING CEMENT

14:45: K. SAUER OFFSITE FOR SUPPLIES

14:50: K. SAUER BACK ONSITE

14:50: INSTALLATION OF ENTRAINMENT  
PIPES + CAPS ON G3, G4, + G5

5 Location S.E. ROCKFORD Date Mon 8/8/16  
Project / Client AREA 4, IEPA, ERH SYSTEM

BOREHOLE	DTW (FT) <sup>(100)</sup> <del>(5)</del>	ENTRAINMENT DEPTH
G3	27.2	27.78
G4	27.27	27.85
G5	27.63	28.21

15:50: DRILLERS DONE WITH GWP-G5,  
MOVED ONTO MPE-ES

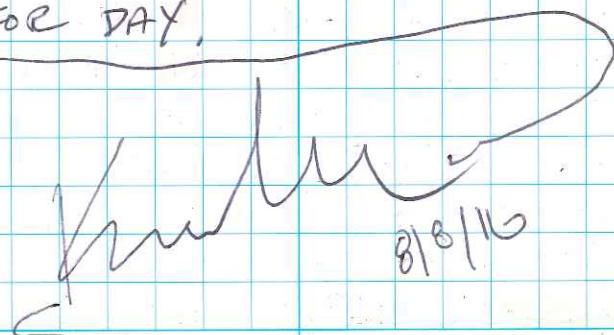
1610: TRS PLACING OVERPIPES ON  
MPE PIPING INSIDE BUILDING

1640: KES DONE DRILLING FOR DAY,  
SITE CLEANUP

1645: TRS HAS INSTALLED METAL TO  
HOTE PIPE FITTINGS ON MOST OF  
THE MPE WELL PIPE HEADS.

1645: DAVE ROJAN INFORMS MPE-ES SAIL  
IS CLEAN TO JUST ABOVE WATER TABLE

158<sup>KES</sup> 1700: K. SAUER + D. ROJAN OFFSITE  
FOR DAY.

  
8/8/16



Location S.E. ROCKFORD Date TUES. 8/9/16  
 Project / Client AREA 4 ERH RA  
IEPA

0700: K. SALLER ONSITE AREA 4  
 PERSONNEL: DAVID ROJAN (CDW/SMITH)  
 CARLOS SANTANA (KIS), JACK ZILG (KIS)  
 TED HUGALEY (TRS), JEFF RIFFE (TRS)  
 WEATHER: SUNNY, 75°F, FORECAST 91°F

PRE: MODIFIED LEVEL 17

PLAN: CONTINUE DRILLING + INSTALLING  
 MPE-ES ELECTRODE, MOVING ON TO  
 -FS, CONSTRUCTION OF CAPS FOR  
 ELECTRODES ALREADY INSTALLED.

0715: SAFETY MEETING

0740: DRILL RIG STARTUP + INSPECTION

0742: AFTER DISCUSSION WITH DAVE, KEVIN  
 WILL RECORD CONSTRUCTION ACTIVITIES  
 RELATED TO TRS, WHILE DAVE WILL  
 RECORD PRIMARILY KIS DRILLING +  
 SOILS ACTIVITIES

0800: TRS MOVING ELECTRODES FROM  
 STORAGE TO ES AREA, DRILLING ON  
 ES RESUMES

0820: KIS DONE DRILLING ES TO ~39',  
 TRS MIXING ELECTRICALLY CONDUCTIVE  
 MATERIAL AT 3:1 GRAPHITE:SHOT

0835: BEGIN PLACING ELECTRODE IN ES  
 AND CONDUCTIVE MATERIAL.

Location S.E. ROCKFORD Date TUES. 8/9/16  
 Project / Client AREA 4 ERH RA  
IEPA

0903: DONE PLACING ELECTRICAL  
 FILL IN MPE-ES TO 23" BGS,  
 BEGAN PLACING #4 SAND

0934: FINISHED PLACING SAND IN  
 MPE-ES, DRIP TUBE INSTALLED,  
 SAND PLACED TO 6" BGS

0940: MEASURED WATER LEVEL IN ES  
 TO BE 27.42' FROM TOC, WILL  
 MEASURE AGAIN IN A FEW HOURS  
 FOR ENTRAINMENT TUBE DEPTH.

0945: MOVED RIG TO FS, BEGAN  
 DRILLING USING HSA + PLUG  
 AT BOTTOM

0949: NOTICED 2" GAS LINE RAN  
 VERY CLOSE TO PROPOSED FS LOCATION,  
 MOVED FS 3.5' SOUTH OF ORIGINAL PT.

0958: HAND-AUGERING TOP 5' OF FS,  
 BEGAN DRILLING FS

1000: TED CONTINUING TO TIGHTEN WELL  
 TOPS + PIPING ON INSTALLED MPE WELLS

1057: TRS BROUGHT ELECTROPE PILES  
 TO FS LOCATION

1104: TRS BEGAN MIXING NEW BATCH  
 OF ELECTRICALLY CONDUCTIVE MATERIAL  
 AT A 3:1 GRAPHITE:SHOT



Location S.E. ROCKFORD Date TUES. 8/9/16  
 Project / Client AREA 4 ERH RA  
IEPA

1137: KES BEGAN PLACING ELECTRODE  
DOWN FS

1147: PLACING ELECTRICAL MATERIAL  
DOWN FS

1155: GEORGE LYTWYNSHYN (TRS) <sup>IS CTS</sup>  
ON SITE INSPECTING ELECTRODES

1201: CLARIFICATION: GEORGE L. WAS  
WITH CTS, NOT TRS

1205: ELECTRICALLY CONDUCTIVE MATERIAL  
PLACED FROM ~39' BGS TO 22' BGS

1210: SAND (#4) PLACED FROM 22' TO 0.5' BGS

1400: DRILLERS BEGIN POURING SAND  
TO 0.5' BGS IN FS - ALL PERSONNEL  
OFFSITE FROM 12:30 TO 13:30

1400: SMALLER DRILL RIG REMOVED  
FROM SITE VIA KES

1410: KES FINISHED FS & MOVE RIG  
TO E4, CLEAN UP SOILS ON GROUND

1429: KES BEGIN DRILLING E4, WATER  
LEVEL MEASUREMENT AT E5 = 27.42' BGS

15:30<sup>FS</sup> 03: TRS MIXING CONDUCTIVE MATERIAL  
3:1 GRAPHITE/SHOT FOR E4

1540: TRS STILL CUTTING OVERSLEEVES FOR  
IN-PLACE WPE ELECTRODES

1556: KES REACH ~39' IN E4, BEGIN ADDING

Location S.E. ROCKFORD Date TUES 8/9/16  
 Project / Client AREA 4 ERH RA  
IEPA

~~CONT.~~ ELECTRICAL MATERIAL TO  
ANNULAR SPACE

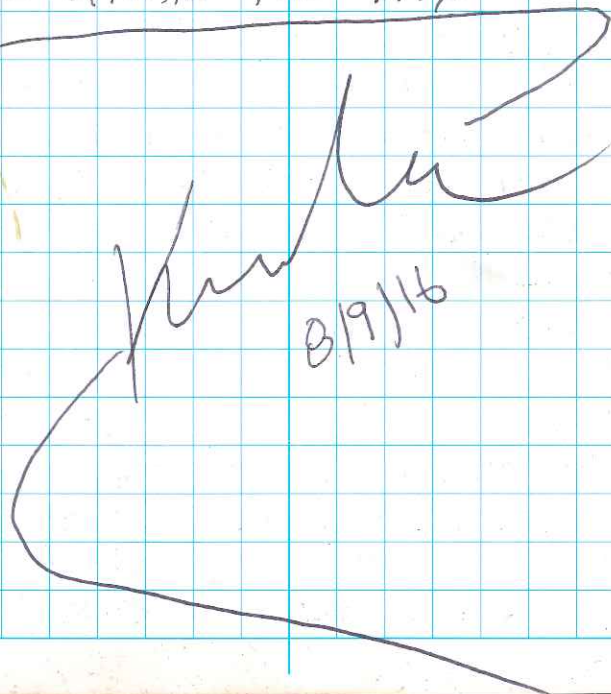
1600: TRS & KES PLACING ELECTRODE  
IN E4.

1615: 22' BGS MEASURED TOC TO  
TOP OF CONDUCTIVE FILL

1620: PLACING SAND TO SURFACE

1710: COMPLETION OF WELL, ALL HSA  
OUT OF GROUND, W.L. → 27.31 TOC  
FOR 4E.

17:20: OFFSITE FOR DAY

  
8/9/16



Location S.E. ROCKFORD Date WED 8/10/16  
 Project / Client AREA 4 ERH RA  
IEPA

0710: K. SALLER ONSITE  
PERSONNEL: DAVID ROSAN (CDMSMITH)  
 CARLOS SANTANA (KCS), JACK ZILZ (KCS)  
 TED HUGHLEY (TRS), JEFF RIFFE (TRS)  
WEATHER: 75°F, FORECAST: 90°F SUNNY  
PPE: MODIFIED LEVEL D  
PLAN: DRILL & INSTALL WPE WELLS F4,  
 E3, & F3; CUT ENTRAINMENT PIPES &  
 INSTALL CAPS ON E5, F5, & E4  
 0715: KCS WARMING UP DRILL RIG  
 0730: DRILLERS BEGIN ON F4.  
 0840: CONDUCTIVE MATERIAL MIXED AT  
 3:1 GRAPHITE:SHOT FOR F4  
 0915: BEGIN PLACING ELECTRODE IN  
 F4: 18' & 21' SECTIONS WITH 4" COUPLER,  
 KCS APPLIED ELECTRICAL GREASE TO  
 THREADS FOR COUPLER (EACH ELECTRODE).  
 0920: BEGAN PLACING ELECTRICALLY  
 CONDUCTIVE MATERIAL <sup>(C.M.)</sup> IN F4;  
 KCS ADD C.M. AND RULL OUT HSA  
 IN 5' SECTIONS, MAINTAINING AT  
 LEAST 5' OF C.M. IN HSA AT ALL  
 TIMES. F4 HAS ~~22.5'~~ <sup>22.5'</sup> OF <sup>HS</sup> WAS  
 FILLED WITH C.M. FROM 39.5' TO 22.5'  
 BGCS.

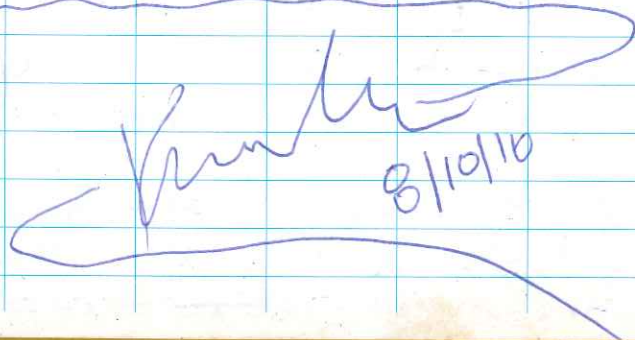
Location S.E. ROCKFORD Date WED 8/10/16  
 Project / Client AREA 4 ERH RA  
IEPA

0945: KCS FINISHED ADDING  
 C.M. TO F4, BEGAN ADDING  
 #4 SAND TO 0.5' BGCS.  
 1015: TED TAKING WATER LEVELS  
 FROM E5, F5, & E4 FOR CUTTING  
 ENTRAINMENT PIPES?  
 W.L.: E5: 27.76' → 28.34' ENTRAIN PIPE  
 W.L.: E4: 27.45' → 28.03' " "  
 W.L.: F5: 28.0' → 28.58' " "  
 1015: KCS COMPLETED PULLING FROM  
 F4, BEGAN CLEANUP & MOVING  
 TO E3  
 1037: KCS BEGAN DRILLING ON E3  
 1040: NOTE? C.M. IS LOOSE SO SWS  
 EARTH CONTACT BACKFILL (GRAPHITE)  
 1130: RIG OFF, SITE CLOSED FOR  
 LUNCH BREAK, ALL PERSONNEL  
 OFFSITE  
 12:30: ALL PERSONNEL BACK ONSITE  
 1300: KCS START DRILLING  
 AGAIN ON E3 (STOPPED AT 25' BGCS  
 BEFORE LUNCH).  
 1330: KCS FINISH DRILLING E3,  
 BEGAN ADDING C.M. DOWNWELL  
 AFTER PLACEMENT



Location S.E. ROCKFORD Date DEC 8/10/12  
 Project / Client AREA 4 ERH ZA  
IEPA

0810116  
 13:30: OF ELECTRODE IN E3.  
 14:10: DEPTH OF E3 CM, 39.5'  
 TO 21.8' BGS, BEGIN  
 ADDING SAND TO 0.5' BGS.  
 1415: TRS PLACING ENTRAINMENT  
 PIPE IN E3.  
 1430: TRS PLACING ENTRAINMENT PIPE  
 IN F3.  
 1447: KES MOVE OFF OF E3, MOVE  
 TO F3.  
 1450: W.L. IN E3 = 27.21' BGS TO C  
 508: TRS INSTALLED ENTRAIN PIPE  
 AND CAP ON E4.  
 1525: KES BEGIN DRILLING ON F3.  
 1620: KES STOPPING DRILLING ON F3  
 FOR DAY; RE-FUELING + CLEAN UP;  
 - TRS STILL ASSEMBLING NEW ELECTRODES  
 1635: K. SALLER + D. ROJAN OFFSITE

  
 8/10/10

Location S.E. ROCKFORD Date THURS, 8/11/16  
 Project / Client AREA 4 ERH ZA  
IEPA

0815: K. SALLER (AUTHOR) (CPIN SMITH) ON SITE  
PERSONEL: DAVID ROJAN (CPIN SMITH),  
 BRAD MORRIS (TRS), TED HUGHLEY (TRS),  
 JEFF RIFFE (TRS), CARLOS SANTANA  
 (KIS), JACK ZILZ (KIS) ALREADY  
 ON SITE.  
WEATHER: 76°F SLIGHT BREEZE, SUNNY  
FORECAST: MID 90'S  
PPE: MODIFIED LEVEL D  
PLAN: KES TO CONTINUE INSTALLING  
 MPE - F3, FINISH REMAINING MPE  
 INSIDE FENCED AREA, POSSIBLY FINISH  
 ZA VP OR TMP LEFT NEAR F4  
 0816: KES ALREADY POORING CONDUCTIVE  
 MATERIAL (C.M.) DOWN F3, D. ROJAN  
 SAYS HSA DRILLING WAS COMPLETED  
 AT 0820.  
 0901: KES FINISHED PLACING C.M.  
 IN F3 TO 23' BGS (39'-23' BGS  
 FILLED WITH C.M., KES BEGIN  
 FILLING REMAINING ANNULAR  
 SPACE WITH SAND (#4).  
 0920: TRS ASSEMBLING ENTRAINMENT TUBES  
 FOR E3, F4, & F3  
 0948: ETS DELIVER TWO MORE 20 CUBIC



14 Location S.E. ROCKFORD Date THUR 8/11/16  
Project / Client AREA 4 ERH RA  
IEPA

(CONT.) YARD DUMPSTERS FOR SOILS  
1000: KES FINISH & MOVE OFF F3,  
MOVE RIG ONTO G2.

1010: TRS MEASURED W.L. DEPTHS

MPE	W.L. (H2O)	ENTRAIN. PIPE LEN
F3	27.24	27.82
F4	27.16	27.74

1012: ETS DELIVERY TRUCK OFFSITE

1014: FOUR, 52-GALLON METAL DRUMS  
WERE PLACED ONSITE ON 8/10/16,  
CONTENTS ARE HYDRAULIC OIL, WATER,  
SOIL SAMPLE SLEEVES, DECON WATER,  
AND SOIL CUTTINGS, ALL FROM:

"SE ROCKFORD SUPERFUND SITE"

ADDRESS: 2013 S. 11<sup>TH</sup> ST., ROCKFORD,  
IL, 61109. CONTACT: TIM DREXLER  
USEPA 312.353.4367

1017: KES BEGIN DRILLING ON MPE-G2

1025: TRS INSTALLING ENTRAPMENT  
PIPE (E.P.) ON F4.

1027: FEDEX DELIVERY OF STEEL HOSE  
FOR TRS

1120: KES REACH 25' BGS, STOP FOR  
LUNCH BREAK

1125: CDM SMITH & KES OFFSITE

15 Location SE. ROCKFORD Date THUR 8/11/16  
Project / Client AREA 4 ERH RA  
IEPA

1205: CDM SMITH BACK ONSITE

1234: TRS BACK ONSITE, GATE  
OPENED (BRAD + JEFF FROM TRS),  
TED LEFT SITE FOR DAY

1240: JACK & CARLOS (KES) JACK ONSITE

1254: DRILLING OF G2 CONTINUES

1315: KES FINISH DRILLING G2,  
PLACING ELECTRODE IN WELL

1320: KES PLACING CM IN G2

1325: CH2M HILL PERSONNEL ONSITE  
HKS LEAVING 5-GALLON BUCKETS OF  
SOIL WASTE FROM A NEARBY  
ROCKFORD SUPERFUND SITE

1335: C.M. FIRED TBS FROM 39.5'  
TO 22.7' BGS

1342: KES FILLING G2 WITH  
SAND

1343: BRAD (TRS) FINISHED  
ASSEMBLING WELL CAPS TO F4 + E3.

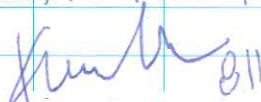
1403: KES FINISHED PLACING #4  
SAND IN G-2 TO 0.5' BGS

1411: KES MOVING RIG TO VP-G4,  
WHICH IS DRILLED WITH A 4 1/4"  
I.P. HSA

1430: KES BEGIN DRILLING VP-G4



Location S.E. ROCKFORD Date THUR 8/11/16  
 Project / Client AREA 4 ERH RA  
IEPA

- 1447: KES FINISH DRILLING HOLE FOR VP-G4, BEGAN INSTALLING VP PIPING: 32" OF 20-SLOT AT BOTTOM OF VP, 14' TOTAL LENGTH
- 1450: FILLING VP-G4 WITH SAND AND PIPING, SAND TO 7'6" BGS, GROUT TO
- 1453: STICKUP ON VP-G4 IS 9"
- 1507: KES MIXING GROUT: 25-GAL WATER + ~~15~~<sup>15</sup> 94 LBS BAGS OF TYPE 1 PORTLAND CEMENT (5 BAGS)
- 1525: KES FINISHED MIXING & POURING GROUT INTO VP-G4 TO ~ 0.5' BGS
- 1539: KES MOVED RIG TO TMP-F4
- 1540: TRS POURED GROUT FOR: MPE-J5, J4, K6, H4, M5 D<sup>KS</sup>
- 1547: KES BEGIN DRILLING TMP-F4
- 1550: GROUT POURED AT 1540 WAS FOR THE OVERSLEEVES - CLARIFICATION
- 1627: KES REACH 25' BGS IN TMP-F4, SHUT DOWN FOR DAY.
- 1630: SITE CLEANUP; EQUIPMENT PUT INTO BUILDING
- 1640: OFFSITE FOR DAY  8/11/16

Location S.E. ROCKFORD Date FRI 8/12/17  
 Project / Client AREA 4 ERH RA  
IEPA

- 0700: K. SALLER ONSITE, & CH2M HILL DROPPING OFF DERIVED SOIL WASTE ONSITE (JIM MALSON)
- PERSONNEL: BRAD MORRIS (TRS), JED<sup>KS</sup> DAVID ROSAN (CON SMITH), CARLOS SANTANA (KES), JACK ZILZ (KES), JEFF RIFFE (TRS)
- WEATHER: 70°F, CLOUDY, SLIGHT RAIN, FORECAST: 80°F WITH RAIN
- PPE: MODIFIED LEVEL D
- PLAN: FINISH TMP-F4, POSSIBLY MOVE ON TO REMAINING ~~GWP~~<sup>GWP</sup> GWP-ETS UNLESS RAIN INTERFERES
- 0730: CH2M HILL OFFSITE
- 0736: TRS CONDUCTS SAFETY MEETING, DISCUSSION OF LIGHTNING WATCHES, CARLOS (KES) ONSITE
- 0746: JEFF (TRS) ONSITE, WAS GETTING GAS FOR FORKLIFT
- 0810: KES FINISHED DRILLING TMP-F4, BEGAN MIXING GROUT FOR ANNULAR SPACE
- 0900: KES AND TRS PLACING COPPER PIPE (15") TO 37' BGS BY SOLDERING 2 PIPES TOGETHER



Location S.E. ROCKFORD Date FRI 8/12/16  
 Project / Client AREA 4 ERH RA  
IEPA

0902: TRS SUBCONTRACTOR ONSITE  
 DELIVERING FENCE FOR UPCOMING  
 STREET WORK (DACH FENCING)

0903: KES BEGIN GROUTING TMP-FY  
 AND PULLING CASING (HSA)

0904: DACH FENCING OFFSITE

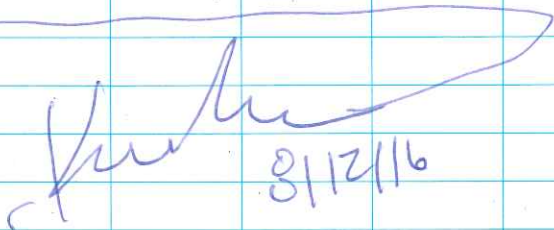
NOTE: GROUT WAS MIXED WITH  
 30 GALLONS OF WATER + 5,94 LB  
 BAGS OF TYPE I PORTLAND  
 CEMENT

1003: KES FINISH PULLING HSA  
 FROM TMP-FY, GROUT @ ~1.0' BGS

1017: KES FINISHED TMP-FY,  
 CLOSED DOWN RIG FOR DAY,  
 CLEANING UP SITE, TRS CANT  
 USE LEFTOVER GROUT FOR  
 MPE OVERSLEEVES DUE TO RAIN.

1026: KES DRILLERS OFFSITE

1030: K. SAWER + DAVE ROJAS OFFSITE

  
 8/12/16

Location S.E. ROCKFORD Date MON. 8/15/16  
 Project / Client AREA 4 ERH RA  
IEPA

0858: KEVIN SAWER ONSITE (AUTHOR)

0905: CARLOS SANTANA (KES) AND  
 JACK ZIE (KES) ONSITE, TED  
 HUGHLEY (TRS) ONSITE

0910: TRAVIS ROJAS (COMSMITH) ONSITE  
WEATHER: 72°F, SLIGHTLY CLOUDY,  
 MID 80S FORECASTED

PPE: MODIFIED LEVEL D

PLAN: DRILL + INSTALL TWO  
 GROUNDWATER MONITORING POINTS:  
 GWP-E3 - GWP-F3, GROUT OVERSLEEVES

0939: KES STARTUP RIG + MOVE  
 TO GWP-E3

0940: ~~TED~~<sup>15</sup> TIM BLACK (TRS)  
 ONSITE

0950: KES BEGIN DRILLING GWP-E3

1017: TED (TRS) CONSTRUCTING PIPE  
 FOR GWP-E3

1102: KES FINISH DRILLING GWP-E3  
 WITH HSA TO 47' BGS; TED  
 MADE 45' LONG GROUNDWATER  
 MONITORING PIPE, WILL FILL BOTTOM  
 2' OF WELL (E3) WITH SAND

1109: KES REPLACING BALL VALVE  
 (BROKEN) ON RIG FOR GROUT MIXING



Location S.E. ROCKFORD Date MON 8/15/16  
 Project / Client AREA 4 ERH RA  
IEPA

1200: KES HAVING DIFFICULTY  
 PULLING HSA OUT OF GWP-E3  
 AFTER PLACING IN 47.7' OF  
 MONITORING WELL PIPE & 1 BAG  
 OF #4 SAND.

1210: AFTER DISCUSSION, KES PULLING  
 GROUNDWATER PIPE OUT OF HOLE,  
 GOING TO RECALL GWP-E3 FOR  
 A SECOND TRY AT INSTALLATION.

1239: BRAD MORRIS (TRS) ONSITE

1242: KES BEGIN POURING SAND  
 AGAIN IN GWP-E3 AFTER  
 RE-INSERTING PIPING.

1250: TRS MEASURING WATER LEVELS  
 IN MPE-F3 AND -G2:

W.L. (BTOO)	WELL	ENTRAPMENT PIPE DEPTH
27.09'	F3	27.67'
27.19	G2	27.77'

1415: KES OFFSITE FOR LUNCH

1419: CDM SMITH OFFSITE FOR LUNCH

1500: CDM SMITH BACK ONSITE

1520: KES BACK ONSITE

1525: KES RESUME PULLING IN GWP-E3

1533: KES FINISH PLACING SAND IN  
 GWP-E3; PULLING REMAINING HSA.

Location S.E. ROCKFORD Date MON 8/15/16  
 Project / Client AREA 4 ERH RA  
IEPA

1533 (CONT.): TOTAL SAND DEPTH  
 IN GWP-E3 FROM 47-16' BGS,  
 GROUT ABOVE SCREEN 40-20' BGS

1552: KES MIXING GROUT AT  
 5 GAL WATER TO 1.94 16 BAG  
 OF PORTLAND TYPE 1

1630: KES PLACING GROUT IN  
 GWP-E3 FROM 16' BGS TO SURFACE

1645: TRS MOVING "ROAD CLOSED"  
 SIGNAGE 100 YARDS CLOSER  
 TO SITE ON MARSHAL STREET

1700: KES FINISH GROUTING GWP-E3

1705: BRAD (TRS) FILLING  
 TOP PORTION OVERSLEEVES WITH  
 GROUT ON: MPE-J6, -H5, -G4,  
 -G5, -F4, -H6, -E5, -E4, -G3,  
 -L4, -L5, TMP-M5

1720: KES RELOCATE RIG TO  
 GWP-F3. DISCOVERED IT WAS  
 ONLY 9' FROM THE OVERHEAD  
 POWER LINES, MOVED POINT EAST 1'

1725: SITE CLEANUP DAVE ROSAN OFFSITE

1730: K. SAUER OFFSITE

 8/15/16



Location S.E. ROCKFORD Date TUES 8/16/16  
 Project / Client AREA 4 ERH RA  
IEPA

0715: K. SALLER ONSITE (AUTHOR)  
 PERSONNEL: DAVE ROJAN (CDM SMITH),  
 CARLOS SANTANA (KES), JACK EILE  
 (KES), BRAD MORRIS (TRS), TED HUCKLEY  
 (TRS), TIM BLACK (TRS)

WEATHER: 72°F, SUNNY, FORECAST:

HIGH 80s SUNNY

PPE: MODIFIED LEVEL D

PLAN: DRILL GWP-F3, MOVE  
 RIG INTO MARSHAL STREET TO  
 DRILL MPE POINTS IN ROAD.

0720: KES TURN RIG ON, START  
 SETTING UP

0738: KES BEGIN DRILLING ON GWP-F3

0907: TRS FINISH DRILLING GWP-F3,  
 BEGIN ACTIVITIES TO PLACE PIPING  
 + SAND

0910: TRS ASSEMBLING PIPING +  
 VALVES FOR TREATMENT SYSTEM  
 (INSTALLATION AFTER MPE - TRENCHES  
 ARE FINISHED)

0930: KES PLACING SAND IN GWP-F3  
 AFTER PLACING PIPING

1000: TRS PLACING ENTRAPMENT  
 PIPES IN F3 + G2 (MPE), BEGIN

Location S.E. ROCKFORD Date TUES 8/16/16  
 Project / Client AREA 4 ERH RA  
IEPA

1000 (CONT.) CAPPING + PLACING  
 TOP PIPING IN PLACE FOR CONNECTING  
 TO THE FUTURE TREATMENT SYSTEM.

1110: KES FINISH LAYING SAND IN  
 GWP-F3 TO 16' BGS. SCREEN  
 IN GWP-F3 IS FROM 40-TO' BGS

1135: KES AND CDM SMITH OFFSITE  
 FOR LUNCH

1230: CDM SMITH ONSITE

1240: KES AND TRS BACK  
 ONSITE

1255: KES MIXING GROUT  
 FOR GWP-F3

1256: TRS STILL ASSEMBLING  
 VALVES + PIPING FOR MPE POINTS

1350: KES FINISH MIXING GROUT,  
 PLACING GROUT INTO GWP-F3  
 TRS ARE STILL ASSEMBLING VALVE  
 STRUCTURES FOR MPE POINTS

1405: KES FINISH GROUTING GWP-F3,  
 BEGAN GROUT CLEANUP

1419: TRS GROUTING OVERSLEEVES  
 FOR MPE-H3, -H2, -G3,  
 -F5, -F3, -E3, -G2, -J3,  
 -K3



Location S.E. ROCKFORD Date TUES. 8/16/16  
 Project / Client AREA 4 ERH RA  
1 EPA

1430: TRS & KES HAVE DECIDED TO NEXT MOVE TO THE STREET (MARSHAL) AND BEGIN VP-DY. OTHER POINTS (MPE) MAY NEED TO BE MOVED IN THE STREET BECAUSE OF A TREE BRANCHES ABOVE THE "B" MPE ROW.

1438: DRILL RIG MOVED TO THE VP-DY.

1450: KES DRILLING THROUGH ASPHALT AT VP-DY, HAND AUGERING TO 5' BGS TO AVOID GAS LINE

1500: TRS INSTALLING FENCE AROUND STREET AREA

1530: TRS FINISH SETTING OF FENCE

1547: KES FINISH HAND AUGERING TO 5' BGS FOUND NATIVE SOIL AT ~4.5' BGS AFTER GRAVELY FILL.

1551: KES DRILLING VP-DY WITH RIG & HSA

1615: KES FINISH DRILLING VP-DY TO 15' BGS, WILL FILL 2' OF SAND & PLACE VP IN TO 13' BGS AND CUT OFF AT GROUND SURFACE.

Location S.E. ROCKFORD Date TUES 8/16/16  
 Project / Client AREA 4 ERH RA  
1 EPA

1630: KES FINISH PLACING SAND IN VP-DY FROM 15 TO 8' BGS.

1640: KES MIXING GROUT TO FILL VP-DY TO 4' BGS

1700: KES ADDED GROUT IN VP-DY TO 15' FROM 8' TO 4' BGS, TRS CONTINUING TO BUILD PIPING & VALVE SECTIONS FOR LATER INSTALL ON MPES.

1705: VP-DY IS LEFT OPEN TO 4' BGS OVERNIGHT, SATURDAY

1707: AFTER MEASURING DISTANCE FROM TMP-D3 TO ELECTRICAL WIRES AT 9', WE DECIDED TO MOVE THE POINT 1' DUE WEST

1715: KES BEGIN DRILLING ON TMP-D3 TO BREAK UP ASPHALT AND HAND AUGER TO 5' BGS

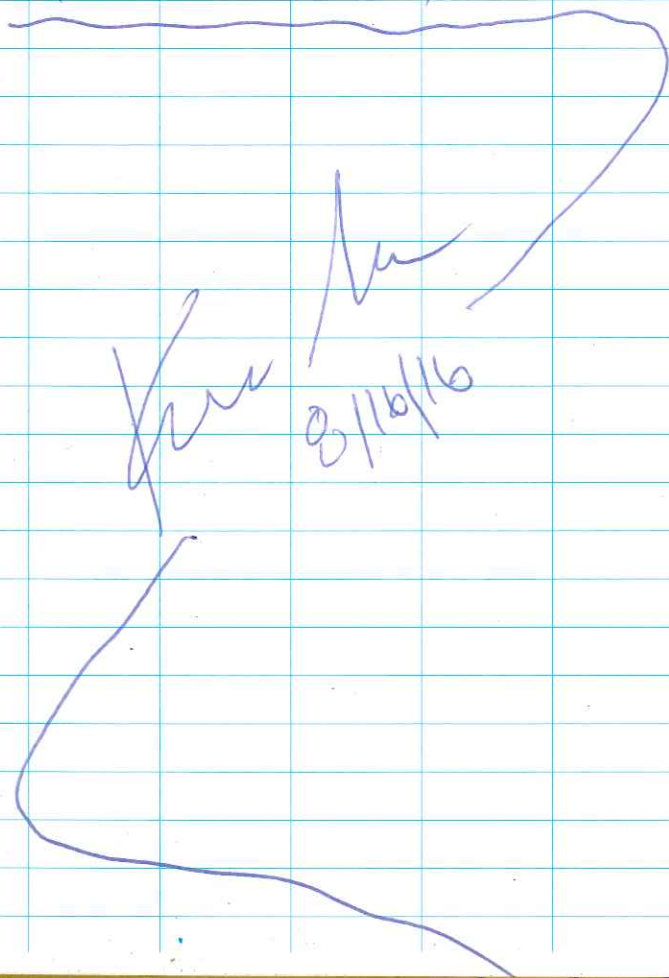
1743: FINISHED HAND AUGERING TMP-D3 TO 5' BGS, BEGAN DRILLING USING HSA

1800: KES REACH 15' BGS IN TMP-D3.



Location S.E. ROCKFORD Date TUES. 8/14/16  
 Project / Client AREA 4 EPH RA  
IEPA

1605<sup>KS</sup> 1805: KES TURN OFF RIG,  
 TRS & KES BEGIN SITE CLEANUP  
 1810: DAVE ROJAN OFFSITE  
 1830: KES AND CDM SMITH (K. SALLER)  
 OFFSITE FOR DAY



Location S.E. ROCKFORD Date WED 8/17/16  
 Project / Client AREA 4 EPH RA  
IEPA

0710: K. SALLER ONSITE, TRS  
 AND DAVE ROJAN ALREADY ONSITE  
PERSONNEL: KEVIN SALLER (CDM SMITH),  
 DAVE ROJAN (CDM SMITH), TED  
 HUGHLEY (TRS), BRAD MORRIS (TRS),  
 TIM BLACK (TRS), CARLOS SANTANA  
 (KES), 2<sup>ND</sup> JACK ZILZ (KES)  
WEATHER: 72°F SUNNY, LIGHT  
 BREEZE, 80% 40% CHANCE SHOWERS  
PPE: MODIFIED LEVEL D  
PLAN: CONTINUE DRIVING TMP DS  
 TO 39' BGS, MOVE ON TO NEARBY  
 ROAD MPES  
 0800: TRS BUILDING MORE VALVE  
 & PIPE ASSEMBLIES FOR MPE POINTS  
 0840: BRAD (TRS) CUTTING HOLES  
 IN OVERSLEEVES (MPE) FOR TUBING  
 CONNECTIONS TO THE FITTINGS  
 AND ELECTRODE (FITTINGS CONNECTED  
 TO ENTRAPMENT PIPE & VACUUM PIPE)  
 0935: KES ONSITE (C. SANTANA & JACK  
 ZILZ): JACK HAD FLAT TIRE  
 0942: TRS CONDUCTED SAFETY MEETING,  
 DISCUSSED ROAD WORK & PLAN FOR  
 DAYS TMP & MPE POINTS



Location S.E. ROCKFORD Date WED 8/17/16  
 Project / Client AREA 4 ERH RA  
IEPA

- 0956: K'S START RIG TO CONTINUE ON TMP-D3 TO 39' BGS
- 0957: TRS LAYING OUT FLEXIBLE TUBING FOR CONNECTING TO MPE WELL HEAD ELECTRODES<sup>KS</sup> ENTRAPMENT & VACUUM PIPING.
- 1027: K'S REACH 39' IN TMP-D3, TRS BEGIN PLACING COPPER PIPING, JOHN GRASS (CPM SMITH) ONSITE.
- 1032: TRS CUTTING FLEXIBLE VACUUM TUBING INTO ~4.5' SECTIONS
- 1040: TMP COPPER TUBES WELDED TOGETHER BY BRAD (TRS) (20' EACH)
- 1046: K'S BEGIN MIXING GROUT TO FILL TMP-D3 TO 2' BGS<sup>KS</sup> 4' BGS
- 1110: TRS IS ATTACHING VACUUM TUBES TO MPE WELL HEADS VIA ~~BARBS~~<sup>KS</sup> BARBS & CLAMPS
- 1150: K'S GROUTING TMP-D3<sup>KS</sup> D3; PULLING HSA RUNS
- 1157: K'S MIXING 2<sup>ND</sup> BATCH OF GROUT FOR TMP-D3
- 1220: K'S MIXING 3<sup>RD</sup> BATCH OF GROUT FOR TMP-D3

Location S.E. ROCKFORD Date WED 8/17/16  
 Project / Client AREA 4 ERH RA  
IEPA

- 1245: TRS ATTACHING BALL VALVE ASSEMBLIES TO VACUUM TUBING ON MPE WELLS - K3, J3, K4
- 1253: K'S MIXING A 4<sup>TH</sup> BATCH OF GROUT TO GET TO 4' BGS; AT 7' BGS AFTER 13.5 BAGS OF GROUT AND 75 GALLONS OF WATER. NEW BATCH IS 10 GAL WATER & 2 BAGS OF 94 LBS PORTLAND TYPE 1 CEMENT
- 1314: JOHN GRASS OFFSITE TO AREA 7
- 1315: TMP-D3 FINISHED, GROUTED TO 4' BGS
- 1330: CPM SMITH OFFSITE TO GET SUPPLIES FROM GRAINGER
- 1420: CPM SMITH BACK ONSITE
- 1431: TRS & K'S BACK ONSITE
- 1500: K'S MOVE RIG INTO PLACE FOR MPE-C2; POINT WAS MOVED 5' PUE NORTH TO AVOID OVERHEAD POWER LINES
- 1535: K'S PRE-DRILL MPE-C2 TO 1' BGS, BEGIN HAND AUGERING TO CHECK FOR SANITARY LINE.



30 Location S.E. ROCKFORD Date WED 8/17/16  
Project / Client AREA 4 ERH RA  
1 EPA

1545  
1340: TED (TRS) CONTINUING TO  
INSTALL MORE VALVE & PIPING FOR  
IS FROM THE MPE - K5, H6, J6, J5, J4

1357: K's FINISHED HAND-AUGERING  
TO 5' BGS, SAND ENCOUNTERED  
AFTER GRAVELLY LAYER.

1600: K's BEGIN DRILLING MPE-C2

1630: AFTER DRILLING WITH AN  
8.25" HSA TO 3.5' BGS, K'S  
ENCOUNTERED AN OLD, BLACK, RUSTED  
~1.5" PIPE RUNNING PERPENDICULAR  
TO THE ROAD. THE PIPE APPEARS  
UNDAMAGED, AS K'S WAS PURPOSELY  
VERY SLOWLY THROUGH THIS UPPER  
FILL SOIL. THE PIPE ISNT ON ANY  
DRAWINGS AND ISNT MARKED ON  
THE STREET. THE HOLE WAS  
FILLED WITH THE REMOVED FILL SOILS.

1653: K's MOVE THE RIG TO MPE-C3,  
TRS PLANNING WHAT TO DO ABOUT MPE-C2  
LOCATION.

1700: K's BEGIN HAND AUGERING  
MPE-C3 TO 5' BGS

1810: FINISH HAND AUGERING TO  
7' BGS.

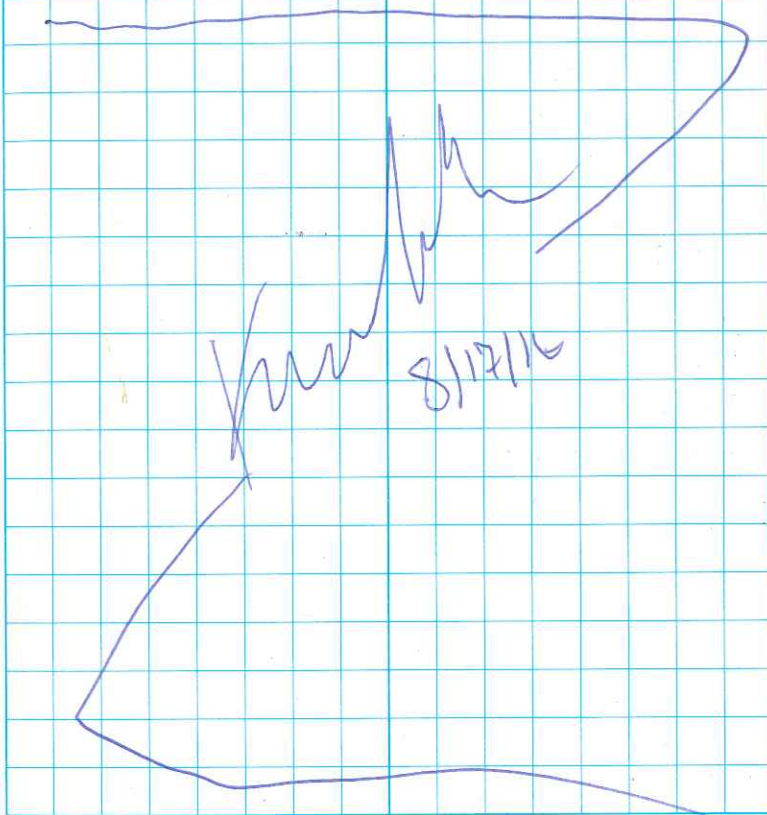
31 Location S.E. ROCKFORD Date WED 8/17/16  
Project / Client AREA 4 ERH RA  
1 EPA

1815: K'S BEGIN DRILLING  
TO 5' BGS

1820: TRS INSTALLED VALVE PIPING  
ON MPE-H2, -H3, -H4, -H5, AND -G2

1821: K&R TURN RIG OFF, SITE  
CLEANUP

1830: K. SAUER - DAVE ROJAN OFF SITE





Location S.E. ROCKFORD Date 8/18/16 THURS.  
 Project / Client AREA 4 ERH RA  
IEPA

0705: K. SAUER (CDM SMITH) ONSITE (AUTHOR)

PERSONNEL: DAVE ROJAN (CDM SMITH),  
 BRAD MORRIS (TRS), TED HUGHLEY (TRS),  
 CARLOS SANTANA (KIS), JACK ERZ (KIS)

WEATHER: 72°F, SUNNY, FORECAST: 85°F

PPE: MODIFIED LEVEL D

PLAN: CONTINUE DRILLING MPE-C3,  
 INSTALLING ADDITIONAL MPE VALVE  
 ASSEMBLIES, MOVE RIG TO ADDITIONAL  
 MPE WELLS

0715: TRS CONDUCTS SAFETY MEETING,  
 DISCUSSED BETTER WAYS TO HAND  
 AUGER HOLES TO AVOID UTILITIES,  
 WAYS TO MITIGATE HEALTH ISSUES  
 RELATED TO HEAT,

0730: KES START DRILL RIG, BEGIN  
 ADVANCING MPE-C3 PAST 5' BGS.

0803: BRAD (TRS) MIXING CONDUCTIVE  
 MATERIAL FOR ANNULAR SPACE IN  
 MPE-C3

0805: NOTE: FOR LITHOLOGY OF MPE-C3  
 REFER TO DAVE ROJAN'S FIELD  
 BOOK PAGE 146.

0812: TRS BROUGHT OUT MPE-C3 ELECTRODES

0832: WOLF BROTHERS TREE SERVICE

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 Project / Client AREA 4 ERH RA  
IEPA

0832 (CONT.) ONSITE TO REMOVE TREE  
 BRANCHES IN WAY (ABOVE) MPE-B2,  
 -B3, AND -B4.

0908: KES REACH 40' BGS WITH HSA  
 IN MPE-C3, BEGIN PLACING  
 ELECTRODE WHICH IS 36.3' LONG  
 AND WILL BE PLACED AT 39.5'  
 BGS. NOTE: ELECTRODES PLACED  
 IN MARSHALL STREET ARE 3  
 FEET SHORTER THAN THOSE  
 PLACED IN ROWS E-K AND  
 WILL BE BURIED WITH NO STICKUP  
 UNTIL TRENCHING BEGINS

0929: THE WOODEN HSA CAP WAS  
 KNOCKED OUT BY DROPPING THE  
 ELECTRODE FROM APPROXIMATELY 4' ABOVE  
 GROUND SURFACE

0931: WOLF BROTHERS TREE SERVICE  
 FINISHED UP AT SITE AND LEFT.

0932: TRS MIXED CONDUCTIVE MATERIAL  
 OF 3 BAGS GRAPHITE & 1 SHOT PER  
 WHEELBARROW, MIXED, AND WATER  
 ADDED TO HELP MOVE C.M. PAST  
 THE WATER TABLE

0935: KES PLACING C.M. DOWN HSA IN C3.



Location S.E. ROCKFORD Date THURS 8/18/16  
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IEPA

- 0940: TED (TRS) ASSEMBLING & INSTALLING VALVE ASSEMBLIES ON MPE-G3.
- 0940<sup>KS</sup> 1010: KES FINISH PLACING C.M. FROM 39.5' TO 22' BGS, BEGIN PLACING #4 SAND, USED 4 WHEELBARROWS OF C.M. (12 BAGS GRAPHITE, 4 BAGS SHOT)
- 1033: KES DONE PULLING HSA FROM MPE-C3, SAND TO 0.5' BGS, 31 BAGS OF #4 SAND USED.
- 1040: KES MOVING RIG TO MPE-C4.
- 1052: KES BEGIN DRILLING ASPHALT ON MPE-C4, HAND AUGERING TO 5-6' BGS.
- 1105: TRS ASSEMBLING VACUUM TO ASSIST IN SOILS REMOVAL FROM HAND AUGERING TO SPEED UP THE PROCESS.
- 1216: SANITATION COMPANY ONSITE
- 1222: SANITATION COMPANY OFFSITE
- 1300: AFTER HAND AUGERING TO 4.5' BGS, A 2" THICK STYROFOAM PAD WAS DISCOVERED, WHICH COVERED A THIN LAYER OF GRAVEL AND SAND.

Location S.E. ROCKFORD Date THURS 8/18/16  
 Project / Client AREA 4 ERH RA  
IEPA

- 1300 (CONT): THE STYROFOAM WAS REMOVED BY BREAKING IT APART AND VACUUMING IT OUT. NATIVE SOIL WAS ENCOUNTERED APPROXIMATELY 1 FOOT BELOW THIS COVER.
- 1340: HAND AUGERING MPE-C4 (7') COMPLETE, BREAK FOR LUNCH
- 1420: BACK ONSITE, BRIAN CONRATH FROM IEPA ONSITE
- 1430: TRS BACK ONSITE
- 1452: KES BACK ONSITE
- 1517: KES STARTING RIG TO DRILL MPE-C4
- 1518: BRAD (TRS) CALLED BRETT BAKER (BORING) & GOT CONFIRMATION THAT THE STYROFOAM WAS INSULATION ON A WATER PIPE, 4'x8' SHEETS, SO WERE ON THE EDGE OF THE SHEET WHICH WAS CENTERED ON THE WATER PIPES.
- 1520: TED (TRS) HAS FINISHED INSTALLING VALVE ASSEMBLIES ON MPE ROWS E+G
- 1540: BRIAN CONRATH FROM IEPA OFFSITE



Location S.E. ROCKFORD Date THURS 8/18/16  
 Project / Client AREA 4 EPH RA  
IEPA

DEPTH (FEET)	PID (PWT)	LITHOLOGY
0-0.4	-	ASPHALT
4-3.5	0.0	LIMEROCK WITH SILTY SAND
3.5-4.0	0.0	BROWNISH GRAY SILTY SAND FINE TO MEDIUM, DRY, MOOR
4.0-4.5	0.0	GRAVEL, SOME SAND, FILL
4.5-4.7	-	2" THICK STYROFOAM
4.7-5.0	0.0	GRAVELLY SILTY SAND, BROWN
5.0-8.0	0.1-0.3	SILTY SAND, LIGHT BROWN GRAY F-M, NO ODR
8.0-25.0	0.2-0.4	SAND, LIGHT BROWN, FINE, SOME SILT, NO ODR, DRY
25-35	0.1-0.4	SAND MOSTLY MED SOME COARSE, BROWN, WET, GETS COARSE WITH DEPTH
35-40	0.1-0.3	SAND, BROWN, M-C NO ODR SOME GRAVEL, MORE BLUE MINERALS

1600: BRAD (TRS) MIXING 3 BAGS GRAPHITE  
 AND 1 BAG SHOT IN WHEELBARROWS, KES  
 PUTTING ELECTRODE IN MPE-C3 AT 39.5'  
 BGS AFTER ADDING 1 BAG OF SHOT  
 TO BOTTOM OF HSA, ELECTRODE IS 36.3  
 FEET LONG PLUS A 4-INCH COUPLER.  
 1703: 4 WHEELBARROWS OF C.M. ADDED  
 TO MPE-C3<sup>TS</sup> ANNULAR SPACE, CM,  
 IS FROM 39.5 TO 21<sup>TS</sup> BGS.  
 1722: TRS INSTALLING COPPER DRIP  
 PIPE WHILE 5' OF HSA IS STILL  
 DOWN HOLE

Location S.E. ROCKFORD Date THUR 8/18/16  
 Project / Client AREA 4 EPH RA  
IEPA

1730: MPE-C4 COMPLETED, FILLED  
 TO SURFACE WITH CLEAN FORMATION  
 SAND

1740: SITE CLEANUP

1750: KES OFFSITE

1753: CDM SMITH (K. SALLER)  
 OFFSITE

*[Handwritten signature]*  
 8/18/16



Location S.E. ROCKFORD Date FRI. 8/19/16  
 Project / Client AREA 4 ERH RK  
IEPA

0705: K. SAUER (CON SMITH) OSTE (AUMAK)  
 PERSONNEL: BRAD MORRIS (TRS), TED  
 HUGHLEY (TRS), CARLOS SANTANA (KIS)  
 JACK ZIE (KIS)

WEATHER: 70°F, CLOUDY, FORECAST: 80°F  
 WITH HIGH CHANCE OF RAIN

PPE: MODIFIED LEVEL D

PLAN: COMPLETE VP-B4, MOVE ON  
 TO NEARBY MPE OR GWP WELLS

0715: TRS CONDUCTS SAFETY MEETING,  
 DISCUSS DRIVING PROXIMITY TO  
 TREES, POTENTIAL FOR RAIN.

0730: KIS MOVES RIG ONTO VP-B4

0745: KIS CORE 4.25" HSA THROUGH  
 ASPHALT, BEGIN HAND AUGERING

0746: CH2M PERSONNEL ONSITE  
 DEALING WITH THEIR SOIL CUTTINGS  
 LEFT ONSITE.

0804: KIS DONE HAND-AUGERING  
 VP-B4 TO 6.5' BGS, NO UTILITIES  
 ENCOUNTERED, FOUND NATIVE SOIL

0810: TRS BROUGHT OUT VP WELL  
 WITH 2.5' SCREEN TO SIT FROM  
 13' TO 10.5' BGS

0820: KIS FINISH DRILLING VP-B4 TO

Location S.E. ROCKFORD Date 8/19/16  
 Project / Client AREA 4 ERH RA  
IEPA

0820 (CONT.) 15' BGS. ALL SOIL  
 SAMPLES HAD PID RESULTS OF 00 ppm

0823: AFTER ADDING 3.5 BAGS  
 OF #4 SAND, VP-B4 WAS FILLED  
 TO 8' BGS (15' TO 8' BGS).

0825: KIS MIXING 15 GAL H<sub>2</sub>O  
 + 2.5 BAGS OF PORTLAND TYPE  
 1 CEMENT

0830: VERY DARK STORM CLOUDS  
 ARE MOVING TOWARDS THE AREA  
 QUICKLY, SHUTTING DOWN SITE  
 OPERATIONS AFTER GROUT IS IN  
 VP-B4 TO 4' BGS

0840: POURED REMAINING GROUT  
 IN TMP-D4 TO 4' BGS

0856: FINISHED VP-B4, RAINING  
 ON SITE, DRILL RIG SHUT DOWN

0900: SITE CLEANUP, RAINING

1000: STILL RAINING, ALL  
 PERSONNEL OFFSITE

*[Signature]*  
 8/19/16



Location S.E. ROCKFORD Date MON 8/22/16  
 Project / Client AREA 4 ERH RA  
IEPA

0900: KEVIN SAWER (AUTHOR) ONSITE (CORNATH)

PERSONNEL: CARLOS SANTANA (KCS),  
 JACK EILZ (KCS), JEFF RIFFE (TRS)

WEATHER: 74°F SUNNY, FORECAST  
 82°F SUNNY

PPE: MODIFIED LEVEL D

PLAN: DRILL GWP-B4, MOVE  
 OP TO GWP-C3

0910: DRILL RIG STARTUP, KCS  
 BREAKING ASPHALT AT GWP-B4  
 TO HAND AUGER TO 7' BGS  
 TO CHECK FOR NEARBY WATER  
 & GAS LINES

0947: KCS REACHED NATIVE SOIL  
 AT 6.5' BGS IN GWP-B4

0948: TIM BLACK (TRS) ONSITE

0950: TRS LOOKING FOR 52-GALON  
 DRUM FOR AIDING WITH SOIL AUGERING  
 AND VACUUMING DOWNHOLE

1015: TRS ASSEMBLING GROUNDWATER  
 PIEZOMETER PIPING FOR GWP-B4

1030: KCS DONE HAND AUGERING TO  
 6.5' BGS, BEGIN HSA ADVANCEMENT

1050: BRIAN CONRATH (IEPA) ONSITE

11:00: JOHN GRABS ONSITE (CORNATH)

Location S.E. ROCKFORD Date MON 8/22/16  
 Project / Client AREA 4 ERH RA  
IEPA

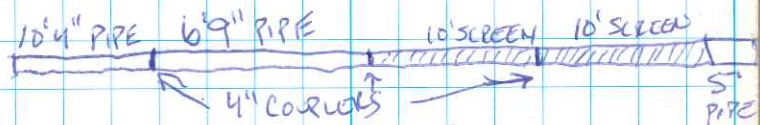
1105: PTD IN GWP-B4 LESS  
 THAN 0.3 ppm TO 25' BGS FROM  
 HSA CUTTINGS, SANDY MOST AT 25'

1100: TROY (BOVINE) ONSITE  
 FOR MEETING

1205: MEETING FINISHED, TROY, JOHN  
 & BRIAN OFFSITE FOR LUNCH

1220: KCS REACHED 47' BGS IN  
 GWP-B4, ADDED 1/2 BAG SAND TO HOLE

1240: KCS PLACING GWS PIEZOMETER  
 IN GWP-B4:



1253: KCS PLACING SAND IN GWP-B4  
 AND PULLING OUT HSA.

1320: MIKE GRABS & BRIAN CONRATH  
 ONSITE

1330: 3,000 LB WENCH ON DRILL RIG IS  
 BROKEN, WILL HAVE TO USE DRIVE  
 TO REMOVE HSA FROM GWP-B4

1340: COM SMITH DISCUSSED SITE ISSUES  
 WITH JEFF (TRS) AND BRIAN CONRATH.  
 ONSITE EXISTING M.W. ABANDONMENT,

RELOCATION OF MPE-C2 & MPE-B2, B3, B4



Location S.E. ROCKFORD Date MON 8/22/16  
 Project / Client AREA 4 ERH RA  
IEPA

- 1400: BRIAN CONRATH + JOHN GRABS OFFSITE  
 1405: KCS REACH 30' BGS IN GWP-BY, K. SAWER, JACK ZILZ, AND CARLOS SANTANA OFFSITE FOR LUNCH.  
 1445: K. SAWER BACK ONSITE  
 1450: JEFF (TRS) ASSEMBLING WELL PIPE FOR GWP-C3: TOTAL LENGTH IS 43.16'  
 1510: KCS START DRILLING AGAIN ON GWP-B4  
 1545: KCS HAVE #4 SAND IN GWP-B4 FROM 47' TO 18' BGS, FILLING TO 0.5' OF TOC WITH GROUT. TOC IS 3.5' BGS, 17 BAGS USED  
 1546: JOHN GRABS ONSITE  
 1620: JOHN GRABS OFFSITE  
 1635: KCS FINISH MIXING 50 GALLONS OF GROUT<sup>BS</sup> WATER + 9 BAGS OF TYPE 1 PORTLAND CEMENT FOR GROUTING GWP-B4  
 1640: KCS POURING IN GROUT AND PULLING AUGERS IN GWP-B4  
 1700: KCS FINISH GROUTING GWP-B4 TO 0.5' BELOW TOC, TOC IS AT 4' BGS, 1 BARREL OF THE GROUT UNUSED

Location S.E. ROCKFORD Date MON. 8/22/16  
 Project / Client AREA 4 ERH RA  
IEPA

- 1724: KCS CLEARING UP SITE, PREP EQUIPMENT FOR NIGHT STORAGE  
 1740: KCS OFFSITE  
 1745: K. SAWER OFFSITE

*[Handwritten signature]*  
 8/22/16



Location S.E. ROCKFORD Date TUES. 8/23/16  
 Project / Client AREA 4 ERH RA  
IEPA

0745: K. SAUER ONSITE, TRS & KES  
 PERSONNEL ALREADY ONSITE  
PERSONNEL: TED HUGHLEY (TRS), JEFF LEE (TRS)  
 CARLOS SANTANA (KES), JACK ZILZ (KES)  
 TIM BLAK (TRS)  
WEATHER: 70°F SUNNY, SAME ALL DAY  
PPE: MODIFIED LEVEL D  
PLAN: DRILL & INSTALL PIPING IN  
 GWP-C3 AND MPE-B4  
 0800: KES FINISH HAND AUGERING  
 GWP-C3 TO 6' BGS, BEGIN DRILLING  
 HSA6 TO 47' BGS  
 0923: KES REACH 47' BGS IN GWP-C3  
 0930: TRS BROUGHT OUT GWP-C3 PIPING,  
 MEASURED 45' LONG TOTAL  
 0953: KES ADDED 1/2 BAG #4 SAND  
 DOWN GWP-C3 BEFORE INSERTING PPE  
 0955: KES ADDING SAND TO GWP-C3  
 (PIPE IS DOWNHOLE, HELP AT SURFACE  
 & DROPPED AFTER SAND WAS MEASURED  
 TO HIT 46' BGS)  
 1000: TRS CONSTRUCTING MPE WELL  
 HEAD ASSEMBLIES (JAWES) FOR  
 REMAINING MPE POINTS ON  
 MARSHALL STREET.

Location S.E. ROCKFORD Date TUES. 8/23/16  
 Project / Client AREA 4 ERH RA  
IEPA

1115: KES FINISH FILLING #4 SAND  
 IN GWP-C3 TO 17.5' BGS - 17 BAGS  
 1120: KES MIXING 30 GALLONS OF  
 WATER & 5 BAGS OF PORTLAND  
 TYPE I CEMENT  
 1146: JOHN GRABS ONSITE  
 1147: KES GROUTING GWP-C3  
 1210: PIPE IN GWP-C3 PLACED  
 AT 46' BGS, JOHN GRABS  
 OFFSITE  
 1215: DRILL RIG DOWN  
 1220: KES, TRS, CPM START OFFSITE  
 1300: K. SAUER (AUTHOR) ONSITE  
 1315: TRS ONSITE  
 1330: KES ONSITE  
 1346: KES MOVED RIG ONTO MPE-B4,  
 BREAK THROUGH ASPHALT, BEGIN  
 HAND-AUGERING TO 8' BGS  
 1530: A 4" IRON PIPE WAS FOUND  
 DURING HAND AUGERING IN  
 THE ORIGINAL MPE-B4 LOCATION  
 1545: MOVED MPE-B4 PDE EAST  
 4', BEGIN HAND AUGERING, BRAD ONSITE  
 1630: HAND AUGERING COMPLETE IN  
 MPE-B4 TO 8' BGS, NO UTILITIES



Location S.E. ROCKFORD Date TUES. 8/23/16  
 Project / Client AREA 4 ERH RA  
IEPA

1640: BEGIN DRILLING MPE-B4  
 1700: ELECTRODE <sup>IS</sup> 36.5' LONG TOTAL.  
 1720: REACH 40' BGS IN MPE-B4,  
 ADDED 1 BAG SHOT, INSERTING  
 ELECTRODE BY DROPPING FROM  
 2' ABOVE GROUND, TOC IS 2.5' BGS  
 1729: PULLING HSA FROM MPE-B4  
 AND PLACING CM DOWNHOLE  
 1802: DONE ADDING CM: TOOK 12  
 BAGS GRAPHITE, 4 BAGS SHOT  
 TO 22' BGS, BEGIN ADDING  
 SAND  
 1820: ADDED 24 BAGS SAND, HSA  
 OUT OF HOLE

DEPTH (FT BGS)	RD	LITHOLOGY (MPE-B4)
0-4"	-	ASPHALT
4"-15"	0.0	LIMESTONE FILL, LIGHT BROWN, NO ODOR
5"-29"	0.0	GRAVELY SAND, DARK BROWN, MOIST
29"-13'	0.1-0.3	SILTY SAND, LIGHT BROWN, FINE, NO ODOR
13'-18'	0.1-0.3	P.A., SOME DARK MINERALS
18'-26'	0.1-0.3	SILTY SAND, MED., MOIST, BROWN
26'-40'	0.1-0.3	SAND, MED, BROWN, MOIST, SOME GRAVEL, LESS FINES & MORE COARSE W/ DEPTH.

1850: KCS AND CPM SMITH OFFSITE

from 8/23/16

Location S.E. ROCKFORD Date WED. 8/24/16  
 Project / Client AREA 4 ERH RA  
IEPA

0700: K. SAUER (AUTHOR) ONSITE  
 PERSONNEL: BRAD MORRIS (TRS),  
 TED HUGHLEY (TRS), JEFF RIFFE (TRS),  
 CARLOS SANTANA (KCS), JACK ELY (KCS)  
 WEATHER: 65°F RAINY, 75°F -  
 RAIN POSSIBLE ALL DAY  
 PPE: MODIFIED LEVEL D  
 PLAN: DRILL - INSTALL ELECTRODES  
 IN MPE-B<sup>XS</sup>B3 AND MPE-B2  
 0710: RAINING HEAVILY ONSITE,  
 WORK STOPPED  
 0755: ANDREW SCHAMBER ONSITE  
 (CPM SMITH)  
 0855: KCS STARTING DRILL RIG  
 0905: TRS LAYING OUT PIPING  
 FOR CONNECTING ALL ABOVE-  
 GROUND MPE POINTS  
 0909: KCS HAND AUGERING MPE-B3  
 0931: TRS ATTEMPTING TO REMOVE  
 ONSITE EXISTING MULTILEVEL WELL  
 BY PULLING IT OUT OF GROUND.  
 0954: KCS SHUT DRILL RIG DOWN  
 0955: TRS PULLED PUMP-TOUBING FROM  
 EXISTING ONSITE MULTILEVEL  
 WELL.



Location S.E. ROCKWELL FORD Date WED 8/29/16  
 Project / Client AREA 4 ERH RA  
IEPA

- 1020: KES FINISH HAND AUGERING,  
 BEGIN DRILLING (AUGERED TO 8' BGS)  
 1041: TRS ASSEMBLING MP ELECTRODES  
 FOR MPE-B3  
 1115: TRS UTILITY LOCATOR ONSITE  
 1130: KES REACH 40' BGS IN MPE-B3,  
 ELECTRODE LENGTH = 36.5' LONG  
 1135: LOWERING ELECTRODE DOWN  
 MPE-B3, TOC AT 2.5' BGS  
 1150: KES PLACING C.M. DOWN HOLE  
 1155: TRS GLUING CPVC PIPES (MAINS)  
 FOR MPE WELLS, CONNECTING MPE  
 VALVE ASSEMBLIES TO THE MAINS  
 1156: KES PULLING AUGER OUT OF  
 HOLE (MPE-B3)  
 1240: C.M. FILLED TO 21' BGS  
 1215: KES POURING SAND INTO HSA  
 FOR MPE-B3.  
 1235: KES FINISH ADDING SAND TO  
 MPE-B3 TO 2.5' BGS - 32 BAGS,  
 FILLED REMAINDER OF HOLE WITH  
 NATIVE SOIL,  
 1247: KES AND COM-SMITH OFFSITE  
 1340: COM-SMITH ONSITE  
 1355: KES AND TRS ONSITE

Location S.E. ROCKWELL FORD Date WED 8/29/16  
 Project / Client AREA 4 ERH RA  
IEPA

- 1409: KES MOVE TUG ONTO  
 MPE-B2, LOCATED 4' EAST  
 AND 1 FT NORTH OF ORIGINAL  
 POINT.  
 1425: KES BEGIN HAND AUGERING  
 MPE-B2, TRS CONTINUING  
 TO GIVE MPE CONDUIT PIPING  
 AND CONNECTING MPE WELLS  
 1500: KES FINISH HAND AUGERING  
 MPE-B2 TO 8' BGS, NO  
 UTILITIES ENCOUNTERED BEGAN  
 ADVANCING HSA TO 40' BGS  
 1510: LITHOLOGY AND PID READINGS  
 (IDENTICAL TO THOSE FROM MPE-B4 (Pg. 46))  
DEPTH (FEET) PID (PPM) LITHOLOGY (MPE-B2)  
 0-4" - ASPHALT  
 4"-16" 0.0 LIMESTONE FILL, LIGHT BROWN, <sup>NO OR</sup> COAR  
 16"-30" 0.0 GRAVELY SAND, DARK BROWN, MOIST  
 30"-25' 20-7.8 SILTY SAND, MOIST, LIGHT BROWN  
 25'-40' <sup>NO OR</sup> SAND, MED, BROWN, NO COAR, <sup>COAR</sup> DEPTH
- 1630: KES DONE DRILLING TO 40' BGS  
 IN MPE-B2; TRS ASSEMBLING ELECTRODE  
 IN HOLE, DROPPED FROM 3' ABOVE GROUND,  
 BEGAN POURING IN C.M.



Location S.E. ROCKFORD Date WED 8/24/16  
 Project / Client AREA 4 EPH RA  
IEPA

1648: KES FINISH PLACING C.M.  
 IN MPE-BZ, PULLING OUT  
 HSA RUNS.

1700: KES FINISH ADDING C.M.  
 FROM 40' TO 22' BGS, BEGIN  
 ADDING SAND.

1715: KES FINISH ADDING #4  
 SAND TO MPE-BZ (34 BAGS) TO  
 0.5' BGS, FILLED REMAINING WITH  
 FORMATION SAND TO BE REMOVED  
 DURING TRENCHING

1720: TRS FINISHED CONNECTING  
 19 MPE POINTS TO THE MAIN  
 CONVEYANCE LINES ( $\frac{4}{6}$ " CRVC)

1729: SITE CLEANUP

1745: KES OFFSITE

1750: CPM SMITH OFFSITE

*Jim*  
 8/24/16

Location S.E. ROCKFORD Date THURS 8/25/16  
 Project / Client AREA 4 EPH RA  
IEPA

0700: KEVIN SAUER (AUTHOR) ONSITE  
 0710: NEW LOCATION FOR MPE-CZ  
 CHOSEN

PERSONNEL: TED HUGHLEY (TRS), JEFF  
 RIFFE (TRS), BRAD MARRIS (TRS),  
 CARLOS SANTANA (KES), JACK  
 EILE (KES), ANDREW SHAMBER (CPM  
 SMITH).

WEATHER: 68°F CLOUDY, FORECAST: LOW  
 80's - PARTLY CLOUDY

PPE: MODIFIED LEVEL D

PLAN: DRILL AND INSTALL MPE-CZ,  
 MOVE RIG TO GWP-L4, CONTINUE  
 INSTALLING CONVEYANCE PIPING ON  
 RAYS K & L.

0740: KES STARTING TO DRILL ASPHALT  
 1 HAND AUGER MPE-CZ, TRS  
 LAYING OUT CONVEYANCE PIPING FOR  
 MPE WELLS.

0830: KES REACH 7' BGS DAYLIGHT  
 MPE-CZ, NO UTILITIES FOUND

0845: KES BEGIN ADVANCING HSA  
 TO 40' BGS IN MPE-CZ

0940: KES REACH 40' BGS WITH HSA  
 IN MPE-CZ, BEGIN INSERTING



Location S.E. ROCKFORD Date THUR 8/25/16  
 Project / Client AREA 4 CRH RA  
IEPA

0940 (CONT.) ELECTRODE TO 39.5' BGS,  
 WHICH CONSISTS OF 3, 10.5' LONG  
 SECTIONS AND 1, 5' SECTIONS.

SOIL RESULTS FOR MPE-CZ:

DEPTH	PID (ppm)	LITHOLOGY
0-4"	—	ASPHALT
4"-16"	0.0	LIMESTONE FILL, LIGHT BR., NO ODR
16"-30"	0.0	GRAVELY SAND, DK BR, MOIST, NO ODR
30"-25'	0-7.0	SILTY SAND, FINE, LIGHT BROWN, MOIST, NO ODR
25'-30'	2.0-7.0	SILTY SAND, F-M, BROWN, MOIST, TO GET, SOME ODR
30'-40'	110-248	SAND, MED, STAINED GRAY, STRONG ODR, SOME COARSE

1000: KES INSERTING C.M. IN MPE-CZ  
 AFTER DROPPING ELECTRODE TO 39.5' BGS  
 AND ADDING 1 BAG OF SHOT TO  
 BOTTOM OF HOLE

1003: TRS FINISH CONNECTING PIPING  
 FOR ALL MPES LOCATED WITHIN  
 THE BUILDING TO CONVEYANCE LINES (LVC)

1017: PHONE CALL WITH JOHN GRABES  
 (COUNSMAN) TO DISCUSS THE POSSIBILITY  
 OF RELOCATING VP-CZ INTO THE PUBLIC  
 RIGHT-OF-WAY OF THE HOUSE DIRECTLY  
 WEST OF THE SITE

1020: KES FINISH ADDING C.M. TO

Location S.E. ROCKFORD Date THUR 8/25/16  
 Project / Client AREA 4 CRH RA  
IEPA

1020 (CONT.) MPE-CZ FROM 39.5' TO  
 22' BGS, TOOK 12 BAGS GRAPHITE  
 AND 4 BAGS SHOT

1024: KES ADDING #4 SAND DOWN  
 THE HSA; HSA REMOVED FROM  
 HOLE AS THE SAND IS POURED

1045: DISCUSSION WITH JOHN GRABES  
 AND BRAD MORRIS ABOUT  
 RELOCATING VP-CZ TO BETWEEN  
 MPE-B3 AND -B2, DIRECTLY  
 SOUTH OF THE EXISTING MONITORING  
 WELL IN THE YARD OF THE HOUSE  
 DUE WEST OF THE SITE.

1047: KES FINISH ADDING SAND  
 TO MPE-CZ, MOVING RIG AND  
 SUPPLIES TO GWP-L4 SOUTH OF  
 THE BUILDING. MPE-CZ USED 33 BAGS  
 OF #4 SAND.

1118: MOVING POINT GWP-L4 ~1.5'  
 DUE SOUTH OF ORIGINAL TO FIT RIG.

1129: KES BEGIN DRILLING GWP-L4

1130: TRS ASSEMBLING VALVE ASSEMBLIES  
 FOR MARSHAL STREET MPES

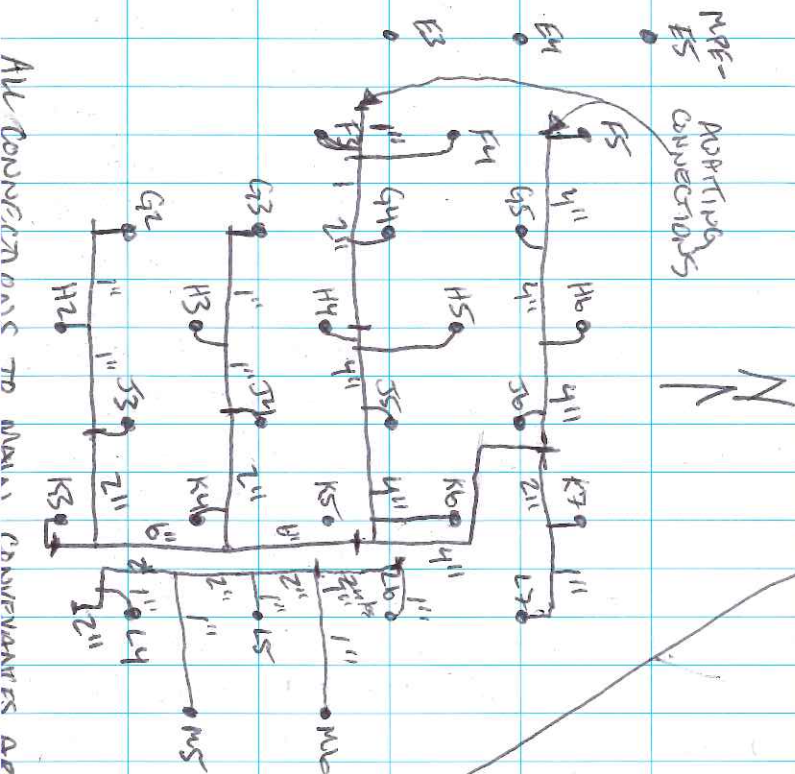
1152: RIG OFF, KES OPPOSITE

1250: KES ONSITE



Location S.E. ROCKFORD Date THUR 8/25/16  
 Project / Client AREA 4 ERH RA  
IEPA

- 1255: TRS ONSITE  
 1300: RIG STARTED, DRILLING  
 GWP-L4 CONTINUING  
 1310: PLAN VIEW OF CONVEYANCE PIPING:



ALL CONNECTIONS TO MAIN CONVEYANCES ARE 1" PIPE

Location S.E. ROCKFORD Date THUR 8/25/16  
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IEPA

- 1406: TOTAL LENGTH OF GWP-L4  
 PIPING IS 47.16'  
 1408: KES REACH 47' BGS WITH HSA  
 IN GWP-L4, BEGIN KNOCKING OUT  
 WOODEN PLUG IN LEAD AUGER  
 1433: KES LOWERING PIPE FOR  
 GWP-L4  
 1455: PIPE IN GWP-L4, KES ADDING  
 #4 SAND AND PULLING OUT HSA  
 16:35: KES FINISH ADDING #4 SAND  
 FROM 45' TO 17' BGS, BEGIN  
 MIXING GROUT  
 1700: KES FINISH MIXING 30 GALLONS  
 WATER AND 5.5 BAGS PORTLAND  
 TYPE I CEMENT; BEGIN POURING  
 DOWN GWP-L4 TO GROUND  
 SURFACE WHILE PULLING HSAS.  
 1715: KES FINISH GROUTING GWP-L4  
 TO SURFACE, TOC = 1.5' ABS  
 1730: SITE CLEANUP AND STORAGE  
 1745: KES AND CPM SMITH OFFSITE

*[Signature]*  
 8/25/16



Location S.E. ROCKFORD Date FRI 8/26/16  
 Project / Client AREA 4 ERH RA  
ISPA

0710: KEVIN SAUER (AUTHOR) ONSITE  
PERSONNEL: ANDREW SCHAMBER (CDM  
 SMITH), BRAD MORRIS (TRS), TED  
 HUGHLEY (TRS), JEFF RIFFE (TRS),  
 CARLOS SANTANA (KS), JACK ELZ (KS)  
 MIKE JACKSON (JACKSON WELDING)

WEATHER: 72°F SUNNY, FORECAST: MID  
 80s SUNNY

PPE: MODIFIED LEVEL D

PLAN: DRILLING VP-L4, MOVE  
 ONTO THE NEW LOCATION FOR  
 VP-CZ IN THE ROW. OF THE  
 HOUSE DUE WEST OF THE SITE,  
 NEXT TO THE EXISTING GROUNDWATER  
 MONITORING WELL.

0715: KS PUT DRILL RIG IN  
 PLACE TO DRILL VP-L4, BEGIN  
 DRILLING TO 15' BGS

0750: KS REACH 15' BGS IN VP-L4, BEGAN  
 PULLING OUT HSA, SCREEN IS 2.5' LONG  
 TOTAL LENGTH IS 13.5' LONG, SCREENED  
 FROM 13.4' TO 10.9' BGS, TOC = 2" AGS,  
 ADDED SAND TO 8' BGS

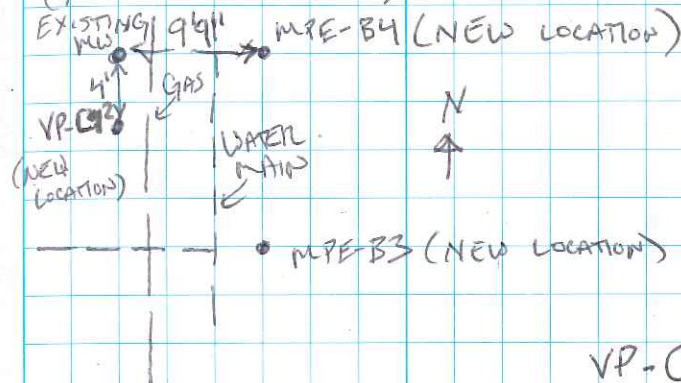
0751: JACKSON WELDING OFFSITE, WELDED  
 NEW CAP ONTO MPE-KS.

Location S.E. ROCKFORD Date FRI 8/26/16  
 Project / Client AREA 4 ERH RA  
ISPA

0759: BRETT BAKER (BODINE) ONSITE  
 TO LOOK AT THE EXISTING VAULT  
 HOOKUP FOR THE ELECTRICAL

OB15: BRETT BAKER OFFSITE

OB16: KS MOVING RIG TO VP-CZ  
 (NEW LOCATION):



0827: KS HAND AUGERING ~~VP-L4~~ <sup>VP-CZ</sup>  
 TRS MIXING GROUT FOR VP-L4  
 AND VP-CZ.

0839: KS GROUTING VP-L4 TO GROUND  
 SURFACE (8' - 0' BGS)

0902: KS DRILLING VP-CZ, TRS  
 COLLECTING SOIL SAMPLES FROM 8'  
 TO 32' BGS; HAMMER USED TO ADVANCE  
 SPLIT-SPOON FOR SOIL COLLECTION

0905: SOIL SAMPLES COLLECTED IF PID  
 IS ELEVATED DURING SCREENING



Location SE. ROCKFORD Date FRI. 8/26/16  
 Project / Client AREA 4 ERH RA  
IEPA

- 1000: KES REACH 32' BGS IN VP-CZ,  
 SOIL SAMPLES TAKEN  
 1002: KES PULLING HSA OUT OF  
 VP-CZ  
 1005: TOTAL LENGTH OF VP-CZ IS  
 14.2', WITH A 40" SCREEN ON  
 BOTTOM  
 1010: HSA ALL OUT OF VP-CZ, BEGIN  
 ADDING #4 SAND TO 14' BGS  
 1015: USED 11 BAGS SAND TO GET  
 TO 8' BGS  
 1035: KES MOVE RIG TO EXISTING  
 MULTI-LEVEL WELL & PREP FOR  
 ABANDONMENT.  
 1050: KES MIXING GROUT FOR VP-CZ,  
 TRS MARKING ASPHALT CUTTING POINTS  
 101: KES FINISH GROUTING VP-CZ  
 TO 0.5' BGS, SITE CLEANUP  
 110: KES OFFSITE  
 1120: CDM SMITH OFFSITE

8/26/16

Location SE Rockford, IL Date Mon 8/29/16  
 Project / Client Area 4 ERH RA  
IEPA

- 0845 - Andrew Schamber (Author) onsite  
 Personnel - Andrew Schamber (CDM Smith),  
 Brad Morris (TRS), Jeff Riffe (TRS),  
 Carlos Santana (KTS), Jack Zilz (KTS)  
 Weather Sunny / partly cloudy 75°  
 PPE - Modified Level D  
 Plan - Abandon monitoring well that  
 is onsite w/in ERH area. MW will  
 be grouted up to surface & bentonite  
 chips placed onsite. Chips will be  
 hydrated. Vault will be cemented.  
 TRS will then begin to sawcut  
 asphalt in Marshall St where trenches  
 will be dug. Roll offs will start  
 to be taken offsite.  
 0913 Neal (Keldorn Trucking) onsite  
 to start hauling soil offsite  
 0930 - Diamond Sawcutt onsite to  
 start sawcutting asphalt in  
 Marshall St. Mike is the sawcut  
 guy onsite.  
 0944 Keldorn hauls 04 roll off boxes  
 1367 + 1368 to landfill.  
 0945 TRS has mini excavator hauled on  
 site

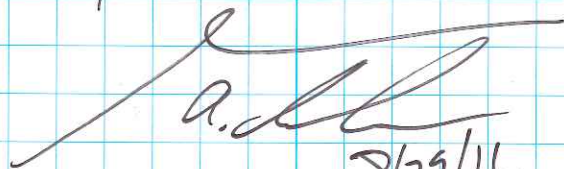


Location SE Rockford, IL Date Mon 8/29/16  
 Project / Client Aren 4 ERH RA  
IERA

- 1006 KTS sets up at monitoring well to start abandonment.
- 1038 KTS starts to set pipe down in MW to start grouting.
- 1044 TRS has a bundle of 2" pipes belined.
- 1108 KTS finished grouting MW to ~~top of~~ TOC which is ~ 2' bgs. Pull tremi pipe out & start to over drill the well to 10' bgs w/ 8" HSA.
- 1117 TRS doing general site clearing (weed wacking, sweeping, organizing equipment, etc).
- 1120 Keldorn back onsite dropping back off empty rolloffs. Will be taking 2 more full rolloffs offsite to landfill.
- 137 2258 hauld offsite to landfill
- 143 KTS finish abandoning MW. they used 30 gal of water, 5 bags portland cement, + 4 bags of bentonite chips.
- John grabs (CDM Smith) onsite with Julie (CDM Smith).
- 205 John, Julie, Andy (CDM Smith) all offsite
- 307 Andy Schamber (CDM Smith) back onsite.
- Diamond Cut finished sawcutting trenches in street. KTS offsite as well.

Location SE Rockford, IL Date Mon 8/29/16  
 Project / Client Aren 4 ERH RA  
IERA

- 1420 Keldorn trucking back onsite to take last rolloff of soil to landfill.
- 1448 TRS finishes installing top electrode on K-5. Placed copper piping down the well and tightened on electrode head.
- 1514 TRS starts peeling back asphalt in Marshall street. Tett inside mini excavator. Only peeled back ~ 15' of asphalt. Will resume in the morning.
- 1537 Steve (TRS) arrives onsite. Will be helping out rest of the week.
- 1543 Keldorn trucking onsite remaining last rolloff. 4 rolloffs will be kept onsite.
- 1600 Andy Schamber + TRS offsite.

  
 8/29/16



Location SE Rockford, IL Date Mon 8/30/16  
 Project / Client Area 4 ERH RA  
IEPA

- 0645 Andrew Schamber (Author) onsite  
 Personnel Andrew Schamber (CDM Smith), Jeff Riffe (TRS), Steve Agostine (CDM Smith), Tim Black (TRS)  
 Weather Cloudy mid 70's Forecast upper 70's 50% chance of rain  
 PPE Modified level D  
 Plan Continue to trench in Marshall St. Peel back asphalt and set off to the side. Trench to approx. 3' bgs and start to lay 2" pipe and connect into electrodes.  
 0737 Jeff gets in excavator & Steve operates cast crawler. Starting to trench main trench between "B" row & "C" row of electrodes. Chris (TRS) onsite.  
 0756 Brett Baker (Boline) onsite. Discussing w/ Chris & Jeff about tying in to one of the BW extraction wells.  
 0805 Brett B. offsite to area 7 to grab a fitting to raise manhole cover off of BW extraction well.  
 0820 Trenching ~~to~~ depths range from 29.5" to 29" bgs.

Location SE Rockford Date Tues 8/30/16  
 Project / Client AREA 4 ERH RA  
IEPA

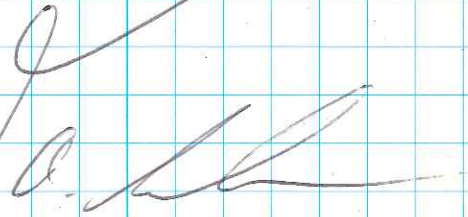
- 0856 TRS hand digging down to ~~temp~~<sup>bw</sup> probe (GUP-B4) so that they can put a 1.5' riser on top to raise it closer to ground surface.  
 0911 Spoke w/ John Grabs. Photos needed to be taken of a soil pile on sandy hollow between 20<sup>th</sup> St & 11<sup>th</sup> St.  
 0931 Andrew Schamber offsite to take photos.  
 0950 Andrew Schamber back onsite @ Area 4.  
 0953 Julie (CDM Smith) onsite.  
 1015 Brett Baker onsite talking w/ Chris (TRS) about connecting into EW-3.  
 1145 Spoke w/ Troy (Boline), Brett (Boline) and Chris (TRS) about running cable into Boline's electrical vault. Vault needs to be sealed water tight. TRS will provide conduit & a quick grip coupler to feed cable into vault. Drilling into vault will be

Location SF Rockford, IL Date Tues 8/30/16  
 Project / Client Area 4 ERH RA  
IEPA

- done by Bodine on Thursday.
- 1100 TRS hand clears trench over natural gas line. Trench was day lighted to 4' bgs w/ no sign of gas line.
- 1130 23.3' depth to bwp L-4
- 1150 TRS & Andrew Schamber offsite for lunch.
- 1305 TRS & Andrew Schamber back on site.
- 1315 TRS Resumes digging trench along west side of Marshall St.
- 1331 Julie onsite.  
(com)
- 1335 Placing copper stinger down B-4 and also placing electrode cap on. Stinger goes down to 23.1' bgs.
- 1431 TRS placed stinger down to 23.3' in ~~B-4~~ <sup>23.4'</sup>
- 1444 Depth to GW in B-3 is ~~23.4'~~
- 1512 TRS placing stinger & electrode head on B-3
- 1531 Placed new drip tube in L-2.
- 1555 stormwater pipe encountered to the east of "Y" row.

Location SE Rockford, IL Date Tues 8/30/16  
 Project / Client Area 4 ERH RA  
IEPA

- 1605 B-2 depth to water 23.4'
- 1617 C-2 depth to water 23.4'. TRS placing stinger & ~~cap~~ electrode cap on B-2.
- 1629 C-2 depth to water 23.6'
- 1708 Stinger & electrode cap placed in C-2.
- 1730 TRS & Andrew Schamber offsite

  
 8/30/16



Location SE Rockford, IL Date Wed 8/31/16  
 Project / Client Area 4 ERH RA  
IEPA

0701 Andrew Schamber (Author) onsite  
 Personnel: Jeff Riffe (TRS), Chris Thomas (TRS),  
 Amy Wagner (TRS), Tim Black (TRS), Steve  
 Agostire (TRS)

Weather Sunny 70°F, Forecast Sunny 78°F

PPE Modified Level D

Plan Continue trenching in Marshall St.  
 and complete all underground electrodes.  
 Possibly start connecting pipe underneath  
 Marshall St.

~~0831~~

0813 TRS starts peeling asphalt in N-S  
 trench along eastern side of Marshall St.

0829 TRS lines 3<sup>rd</sup> dumpster with plastic  
 liner.

0835 Resumes trenching

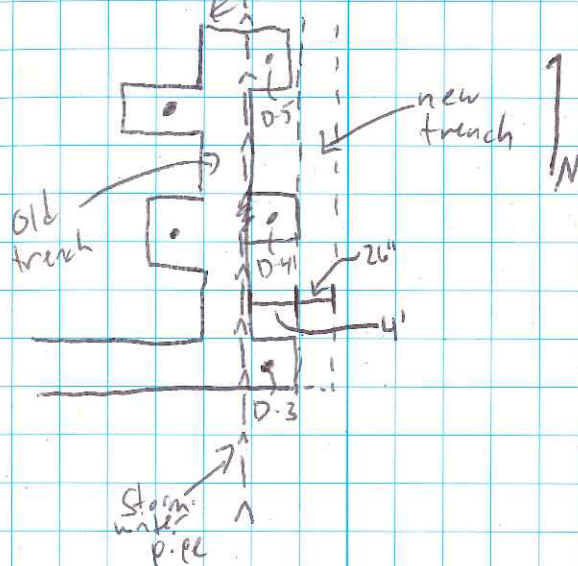
0840 trench running along east side of  
 row "D" electrodes runs parallel to  
 a stormwater pipe. TRS has to bring  
 out an asphalt saw and extend trench  
 to the west roughly 0.5' in order  
 to trench to depth w/o interfering w/  
 stormwater pipe.

0918 TRS places stringer down C-3. Depth  
 to water @ 23.4'

Location SE Rockford, IL Date Wed 8/31/16  
 Project / Client Area 4 ERH RA  
IEPA

0935 Discussion Chris, Jeff, and  
 I about starting a new  
 trench on the eastern side at  
 the "D" row of electrodes

1019 TRS sawcutting new trench that  
 runs 6' to the east of the  
 other trench



1135 TRS continuing to place cable +  
 transducer down GW P-34


1206 TRS + Andrew Schamber offsite  
 for lunch

Location SE Rockford, IL Date wed 8/31/16  
 Project / Client Area 4 ERH RA  
IEPA

- 1310 TRS + Andrew Schamber back on site  
 1320 Trenching near D-4 continues.  
 1420 Stinger + electrode head placed on D-5. Depth to water 23.2' in D-5 and D-4.  
 1440 Stinger + electrode cap placed on D-4  
 1441 D-3 depth to water 22.9'. ~~Trans~~ transducer was placed in bWP-L3  
 1445 ~~Electrical~~ cable (white sleeved) run to B-4. Cable runs south passed B-2 + B-3 then turns east and crosses Marshall St. Exit point for all pipe + cable exits at South end of trenches.  
 1503 Stinger + electrode cap placed on D-3  
 1515 Electrode cable ran to C-4 + B-3  
 1520 Electrode cable ran to B-2. Electrode cables are cut at desired length and lugged at the end. The wire is stripped using a wire stripper then lugged up a long barrel lug then crimped. Silicone tape is then applied over connection between lug + wire rubber. Electrical tape is applied over silicone tape.

Location SE Rockford, IL Date wed 8/31/16 69  
 Project / Client Area 4 ERH RA  
IEPA

- 1527 Electrode cable ran to C-3  
 1535 Electrode cable ran to C-2 + D-3  
 1540 Electrode cable ran to D-5, D-4, D-3  
 8/31/16 TRS started to place 2" cpvc pipe down trench between "B" + "L" electrode rows and extended the cpvc to the east across Marshall St and up inside of property boundary.  
 1715 TRS + Andrew Schamber offsite

  
 8/31/16



Location SE Rockford, IL Date thurs 9/1/16  
 Project / Client Area 4 ERH RA  
IEPA

- 0700 Andrew Schamber (Author) onsite.  
 Personnel Jeff Riffe (TRS), Amy Wagner (TRS),  
 Steve Agostine (TRS), Thomas (TRS)  
 Weather Cloudy 63°F, forecast - 73°F partly  
 cloudy  
PPE Modified Level D  
Plan Continue to run cpvc pipe in trenches.  
 Bodine will be onsite to start construction  
 on connection into existing gu treatment  
 system.  
 0730 (Bodine) Brett Baker onsite  
 0751 TRS starting to excavate over near  
 extraction system vault, approx. 2.5'  
 0815 TRS hand clearing to 4' over natural  
 gas line that runs on the west side  
 of Marshall St.  
 0835 Randy w/ Midwest Mechanical  
 industries onsite to core a hole  
 into side of extraction system vault  
 0900 Keldorn trucking onsite to haul  
 off rolloffs full of soil.  
 0905 Fedex makes delivery  
 0940 trenching completed to gu extraction  
 vault. 2" cpvc piping being placed &  
 glued.

Location SE Rockford, IL Date thurs 9/1/16  
 Project / Client Area 4 ERH RA  
IEPA

- 0950 Randy back onsite to core  
 hole in extraction vault.  
 1001 TRS plans to pressure test  
 2" cpvc pipe to a range of  
 40-70 psi. Ball Valves were placed  
 at end that extends up on  
 property and at a distance  
 of ~4' from extraction vault.  
 Pressure test used to check  
 for leaks or breaks in line.  
 1015 Hex adapters being placed on  
 all below grade drip tubes <sup>Take</sup> <sub>onsite</sub>  
 1033 Keldorn back onsite to haul  
 another rolloff to land fill.  
 1035 Hole cored into extraction  
 vault. Concrete 6" thick, 4" hole  
 1114 Mike Jackson (Jackson welding) onsite  
 to assist w/ welding bolts on  
 electrode caps.  
 1120 TRS placing wire + <sup>temperature</sup> ~~temp~~  
 controls down TMP-D3.  
 1131 Randy (Mechanical Midwest) offsite.  
 1137 Julie CapM Smith) offsite



Location SE Rockford, IL Date thurs 9/11/16  
 Project / Client Area 4 ERH RA  
IEPA

- 1140 TRS pressure testing blowdown tube w/ hose onsite.
- 1151 Blowdown pipe filled w/ water. No leaks.
- 1200 Pressure test complete. All copper pipe intact w/ no leaks. Andrew Schamber walks pipe to inspect if there are any visual signs of leaks & check for integrity of pipe.
- 1224 TRS starting to backfill trench near extraction vault & trench outside of fenced area in Marshall St.
- 1228 Andrew Schamber offsite.
- 1320 Andrew Schamber back onsite.
- 1340 Keldorn returns back onsite to remove 2 rolloffs.
- 1344 Electrodes B-4, B-3, B-2, C-4, VP-B-4, BWP-B4, BWP-L3 are all connected.
- 1350 Drip tube construction, consisting of copper drip tube, hex adapter, white plastic tube, and a copper 90° angle & soldered w/ flux.
- 1400 TRS breaks for lunch.
- 1410 Resumes work. Cable ran from Boline control panel through trench.

Location SE Rockford, IL Date thurs 9/11/16  
 Project / Client Area 4 ERH RA  
IEPA

- 1420 Ozinga delivers flow able fill to site. Starting at edge of Marshall St. fill is dumped into trench by concrete mixer. Slowly work our way to the south in trench between "B" & "C" rows.
- 1436 Truck leaves, fills trench up to C-4. Concrete truck arrives. Fill is placed upto 6" bgs.
- 1425 TRS runs cooling line that runs north-south between "B" & "C" rows then runs east west along south side of ~~the~~ trenches.
- 1700 RTD's (temp probes) were placed in E-W trench along south border of trenches. 2 lines w/ 2 probes were layed. Used to tell temp. of trench.
- 1740 Electrodes that were completed by TRS today (includes copper piping & fittings, electrode cables) B-4, B-3, B-2, C-4, C-3, C-2, D-5, D-4, D-3. Others that ~~were~~ were complete VP-B-4, BWP-B4, BWP-L3, VP-D4, TMP-D3. Drip tubes still need to be completed.



Location SE Rockford, IL Date Thurs 9/1/16Project / Client Area 4 ERH RAIEPA

Vapor points 1"  $\frac{1}{2}$ " pipe cpvc  
 electrodes 1" pipe cpvc  
 temp. points 1"  $\frac{1}{4}$ " pipe cpvc  
~~blow~~ blow points  $\frac{1}{4}$ " pipe cpvc  
 Blowsdown 2" pipe cpvc

1835 TRS + Andrew Schamber  
 offsite.

9/1/16

Location SE Rockford, IL Date Fri 9/2/16Project / Client Area 4 ERH RAIEPA

~~0705~~ Andrew Schamber (Author) on-site  
 Personnel Chris Thomas (TRS), Jeff Riffe  
 (TRS)

Weather clear, sunny 68, forecast mid 70s

PPE Modified Level D

Plan Finish piping in trenches, clean  
 site for long weekend.

0740 TRS starts to place drip tubes  
 on B-2.

1025 Piping nearly complete. Just  
 need to complete drip tube  
 on L-3. TRS doing general  
 site cleaning (sweeping road,  
 hauling soil, hauling asphalt from  
 road).

1145 Site cleaned + piping completed  
 + organized. Jeff Riffe (TRS)  
 offsite.

1230 Chris Thomas (TRS) + Andrew  
 Schamber offsite

Location SE Rockford, IL Date tues 9/6/16  
 Project / Client Area 4 ERH RA  
IEPA

0900 Andrew Schamber (Author) on site.  
 Personnel Amy Wagner (TRS), Jeff Riffe (TRS)  
 Tim Black (TRS), Brad Morris (TRS)  
 Weather clear, sunny 82°, Forecast 90° sunny  
 PPE Modified Level D

Plan TRS plans to tie into EW-3.  
 TRS needs to trench to extraction well and then core into concrete.  
 0940 Amy Wagner (TRS) is onsite today to test below ground electrodes to make sure everything is connected ~~prob~~ properly. SERT test.

1100 Brad Morris (TRS) onsite.  
 1105 Ted Hugley onsite.  
 1130 John Brabs (CDM Smith) onsite.  
 1215 John Brabs (CDM Smith) offsite. TRS  
 1245 SERT test completed w/ no offsite issues.

1317 TRS back onsite.  
 1335 TRS continuing to saw cut from C-3 to EW-3. Next they will peel back surface asphalt and trench down in order to install conduit into extraction well vault.

Location SE Rockford, IL Date tues 9/6/16  
 Project / Client Area 4 ERH RA  
IEPA

1430 TRS finishes excavation upto EW-3. TRS plans to drill 2 holes into side of extraction well (EW-3) vault.  
 1445 TRS is cementing in cylinder cover over K-5.  
 1455 Conversation w/ Jeff Riffe (TRS) Backfill + concrete will be delivered onsite on Wednesday 9/7/16. Permanent fence will installed 9/8/16.  
 1505 TRS begins drilling holes. there will be 3 holes that are 14" in diameter.  
 1545 Holes are drilled and tubing placed. 2 tubes are for cooling loop + 1 tube is for RTD (temperature monitoring).  
 1550 Hydraulic cement was placed around the tubing on the outside & inside of EW-3a is a water tight seal.  
 1630 TRS + Andrew Schamber offsite

A.  9/6/16



78 Location SE Rockford, IL Date wed 9/7/16  
Project / Client Area 4 ERH RAO  
IEPA

0705 Andrew Schamber (Author) onsite  
Personnel Jeff Riffe (TRS), Tim Black (TRS),  
Ted Hughey (TRS), Brad Morris (TRS)  
Weather cloudy 79°F forecast chance of rain  
87°F

DPE Modified Level D

Plan Backfill and concrete trenches in  
Marshall st. Hope to reopen street either  
thursday or friday. General site work  
including connecting K-5 to discharge lines,  
running cables to electrodes. Seal & mudd  
disturbed area near extraction system  
vault.

0730 TRS preparing disturbed area  
with a rake before seeding.

0830 Jeff Riffe (TRS) placed a well  
vault over VP-L2. Flow fill arrives  
on site from Ozinga. Backfill is  
IL DOT Spec. 2384

4,600 psi concrete.

0953 Ozinga back onsite to deliver flow  
fill. 25 cu yds delivered to site so  
far.

79 Location SE Rockford, IL Date wed 9/7/16  
Project / Client Area 4 ERH RAO  
IEPA

1015 ComEd (electric company) onsite  
to inspect where we will be  
bringing power in for the  
PCL unit.

1045 Rain delay. Thunderstorms over  
site.

1100 TRS + Andrew Schamber offsite  
~~1210 TRS + Andrew Schamber~~

1200 Andrew Schamber back onsite

1210 TRS back onsite. Won't be  
pouring concrete today because  
of rain. plan to pour tomorrow  
9/8/16.

1230 Jeff Riffe (TRS) drilling holes  
in pvc cylinder around K-5 for  
hoses coming off of electrode head.  
K-5 will be connected to 4" pvc  
line running east-west. Brad  
Morris connecting pump to generator  
to pump out excess water  
in trenches.

1340 Electrode K-5 connected to 4"  
pipe.



Location SE Rockford, IL Date wed 9/7/16  
 Project / Client Area 4 ERH RAO  
 TMP-M5 IEPA

1347 TRS connecting CPVC to "E" electrode row & laying CPVC pipe over to where belowground electrode pipe comes out of trench.

~~1420~~ 1410 Bill (Dach Fencing) onsite talking to Jeff Rife (TRS) about installing permanent fence.

1425 Bill (Dach Fencing) offsite. Will be installing permanent fence on Thursday 9/8/16 & taking temp. fence panels offsite.

1443 TRS starts placing RTD's (temp. monitoring) down Temp wells. Starts w/ TMP-M5. First RTD (deepest) set at 37' bgs. RTD's set every 5'.

1450 RTD's set down in TMP-K7. Deepest RTD's set at 37' bgs. Shallowest set at 3' bgs.

1517 RTD's set down in TMP-K5. Deepest RTD's set at 37' bgs. 8 RTD's total. Shallowest RTD set at 3' bgs.

1531 RTD's set down TMP-K4. Shallowest set at 3' bgs. Set every 5'. 8 RTD's total.

Location SE Rockford, IL Date wed 9/7/16  
 Project / Client Area 4 ERH RAO  
IEPA

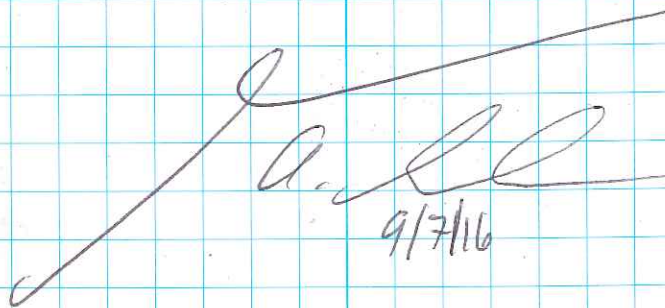
1535 RTD's set down TMP-H3. Shallowest RTD set @ 22' bgs. RTD's set every 5'. 4 total RTD's. Deepest set @ 37' bgs.

1541 RTD's set down TMP-F4. Shallowest RTD set @ 22' bgs. RTD's set every 5'. total RTD's, Deepest set @ 22' bgs.

Over sleeves made of CPVC w/ notches cut at bottom placed over each Temp well (excluding M5) w/ cap placed outtop to keep water out. Over sleeve is temporary.

1553 TRS building manifold & placing valves on electrodes that are below ground.

1630 TRS & Andrew Schamber offsite

  
 9/7/16



Location SE Rockford, IL Date thurs 9/8/16  
 Project / Client Area 4 ERH RAG  
IEPA

0710 Andrew Schamber (Author) onsite

Personnel Jeff Riffe (TRS), Ted Houghley (TRS),  
 Brad Morris (TRS)

Weather cloudy 73°, forecast 83° partly cloudy

PPE Modified Level D

Plan Install permanent fence. Concrete  
 remaining trenches in Marshall St. Work  
 on placing pipe + valves on below ground  
 electrodes + manifold.

0839 Dach fencing on site to install  
 permanent fencing.

0919 Ozinga onsite w/ first truck of  
 concrete. 4 cubic yds.

1005 Ozinga offsite.

1119 Ozinga back onsite w/ another 4  
 cubic yards of 4000 psi concrete.

1206 Ozinga offsite.

1235 Ozinga back onsite w/ last load of  
 concrete. 16 cubic yards total of  
 4000 psi concrete.

1255 Ozinga offsite. Dach fencing completed  
 fence + are placing barbed wire at  
 top.

1310 TRS offsite for lunch

Location SE Rockford, IL Date thurs 9/8/16  
 Project / Client Area 4 ERH RAG  
IEPA

1410 TRS Back onsite. Dach fence  
 offsite.

1410 Andrew Schamber offsite

1511 Andrew Schamber onsite w/  
 Julie (COM Smith)

1534 TRS swept Marshall St and  
 cleaned up concrete area. Now  
 just doing general site ~~clearing~~ cleaning  
 i.e. cleaning up tools, workspace  
 in building, etc...

1630 Andrew Schamber + TRS offsite

*[Signature]*  
 9/8/16

Location SE Rockford, IL Date Fri 9/9/16  
 Project / Client Area 4 ERH KAO  
Illinois EPA

0800 John Grabs, com Smith, onsite at Area 4.

weather: cloudy, calm, 66°F.

PPE: modified Level D.

Plan TRS will be working a half day. Cleaning open and opening Marshall St. following completion of activities in the road.

Brad Morris + Jeff Riffe, TRS on site. Brad, with a push broom, is literally cleaning up Marshall. Brad says that company to remove temp. fence will arrive in 45 minutes and company to remove traffic signs a little after that. I assume that fence company will also install permanent fence along west edge of site, but I need to confirm that.

*Phil M*  
9/9/16

Location SE Rockford, IL Date Fri 9/9/16  
 Project / Client Area 4 ERH KAO  
Illinois EPA

(cont.) my mistake! Permanent fence along west side has already been installed. Ted Hughley, TRS, is also on site.

0705 Two vehicles from Dach Fence Company arrive.

0923 Fence removed and Dach Fence Company has left.

1015 Traffic Services, Inc., here to collect traffic signs. Marshall is officially open!

1050 TRS close to done picking, cleaning, and tidying up the site.

John Grabs offsite to Area 7.

*Phil M*  
9/9/16



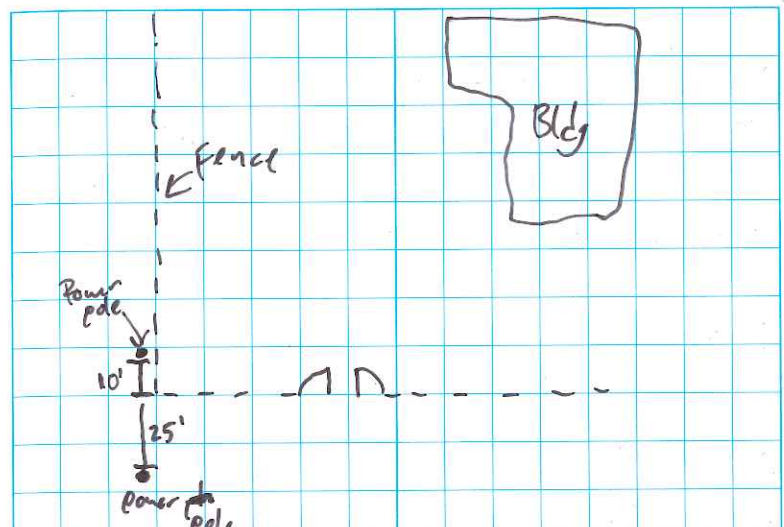
Location SE Rockford, IL Date Mon 9/12/16  
 Project / Client Area 4 ERH ~~ERH~~ RAO  
IEPA

0910 Andrew Schamber (Author) onsite  
 Personnel: Garv Darmanian (EDM Smith), Jeff  
 Riffe (TRS), Brad Morris (TRS),  
 Ted Hughes (TRS)

Weather Sunny, 66°F forecast Sunny 79°F  
 PPE Modified Level D

Plan COMED already onsite to set 2  
 power poles. 1 pole place on  
 SW corner of fencing and another  
 pole will be placed roughly 20'  
 to the North along fencing (outside  
 of fence). Dachs Fencing will place  
 security netting on fence. TRS plans  
 to trench next to power pole on SW  
 corner to get ready for PCU delivery  
 week of 9/19. TRS will also lay  
 cable & connect rest of above  
 ground electrodes in prep for PCU  
 delivery.

Location SE Rockford, IL Date Mon 9/12/16  
 Project / Client Area 4 ERH RAO  
IEPA



1030 TRS starts pulling cable (black rubber) off spool to connect to electrodes. 350 mm or Type "w" cable


1045 Dachs Fencing off site after placing black matting over security fence.

1054 Kelborn trucking onsite to haul off roll off dumpsters. I has soil which will be taken to landfill then. 2 roll offs total, 1 empty & 1 full

1220 Kelborn trucking back onsite to take last empty roll off offsite

Location SE Rockford, IL Date Mon 9/12/16  
 Project / Client Area 4 ERH RAO  
IEPA

- 1230 TRS + Andrew Schamber + Garv  
 Damania offsite.  
 1329 Andrew Schamber + TRS back onsite  
 1334 TRS begins to pull cable off of  
 spool.  
 1537 ComED offsite.  
 1610 Cable was ran to 19 electrodes.  
 TRS doing general site cleaning and  
 prepping a new spool of cable to  
 be pulled tomorrow 9/13/16.  
 1635 4 more cables were ran to electrodes  
 off of second spool. Total of  
 23 electrodes now have cable.  
 1636 UPS makes delivery to site.  
 1645 TRS unspooling last spool of  
 electrode cable. 1 more electrode  
 got cable. Total of 24 electrodes have  
 cable.  
 715 TRS + Andrew Schamber offsite.

Cl.   
 9/12/16

Location SE Rockford, IL Date Tues 9/13/16  
 Project / Client Area 4 ERH RAO  
IEPA

- 0705 Andrew Schamber (Author) onsite  
 Personnel Jeff R. He (TRS), Ted Hughes (TRS),  
 Brad Morris (TRS)  
 Weather Partly cloudy 66°F forecast  
 Partly cloudy 78°F  
 PPE Modified Level D  
 Plan Pull the rest of the cable  
 to remaining electrodes. TRS  
 plans to dig trench & lay  
 conduit where PCV will go  
 ComED may be back onsite to  
 connect rest of phases to  
 power pole.  
 0749 TRS begins pulling cable off of  
 spool. Probably won't be  
 enough cable onsite. TRS may  
 need to get more cable from  
 Des Plaines, IL.  
 0818 ComED back onsite  
 0908 TRS is now planning trenching  
 activities <sup>near</sup> ~~new~~ new power pole.  
 Trench will run at an angle  
 ~24" deep and have a piece of  
 4" conduit coming up into  
 the PCV.



Location SE Rockford, IL Date Tues 9/13/16  
 Project / Client Area 4 ERH RAO  
IEPA

0915 Brad Morris (TRS) speaks w/ their electrician over the phone. Electrician will be onsite tomorrow to run wire & install electrical meter.

0940 Jeff Riffe (TRS) offsite for supplies. TRS will begin connecting pipe for underground electrodes.

1002 Dave Miller (TRS) onsite to work with component programming.

0945 Jeff Riffe back onsite w/ supplies.

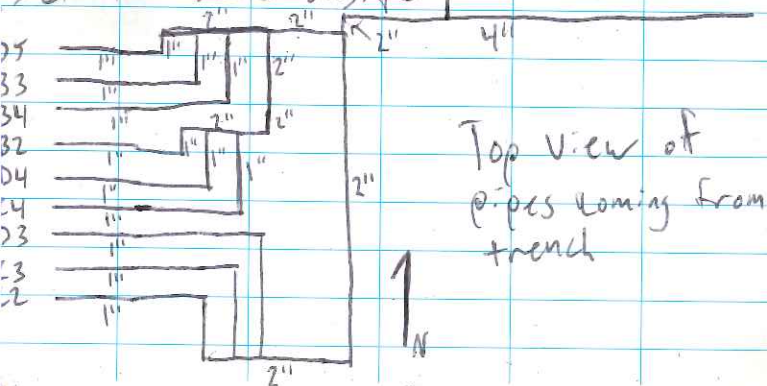
108 TRS begins digging trench next to Northern most power pole.

120 Trench is 2' wide by 3' deep.

205 Andrew Schamber & TRS off site for lunch.

300 Andrew Schamber back onsite.

321 TRS back onsite.



Location SE Rockford, IL Date Tues 9/13/16 91  
 Project / Client Area 4 ERH RAO  
IEPA

1410 TRS finishes connecting pipe to all underground electrodes. (See drawing on pg. 90)

1421 TRS begins prepping to drill holes in electrode over sleeves to connect electrode cable to electrode. As well as labeling electrode outer casings.

1455 TRS begins trenching outside of fence.

1505 ~~TRS~~ TRS begins gluing together 4" PVC pipe for underground conduit.

1630 TRS finishes digging trench and placing 4" PVC conduit inside of it. Trench was backfilled with native soil.

1730 TRS & Andrew Schamber off site.

*[Signature]*  
 9/13/16



Location SE Rockford, IL Date wed 9/14/16  
 Project / Client Area 4 ERH RAO  
IEPA

0705 Andrew Schamber (Author) onsite  
 Personnel Brad Morris (TRS), Jeff Riffe (TRS),  
 Ted Hughley (TRS), MKD Electric  
 Weather Partly cloudy 62°, forecast 75° partly  
 cloudy

PE Modified Level D

Plan Continue to drill holes for electrode  
 cable into electrode outer sleeves. TRS  
 then plans to connect all electrode  
 cables to electrodes. TRS then plans  
 to start connecting drip tubes  
 to all above ground electrodes.

0710 MKD Electric onsite to run power  
 up electric pole, place meter on pole,  
 and run wire through conduit.

0740 Brad Morris (TRS) starts drilling  
 rest of holes for electrode cable  
 while Ted Hughley (TRS) begins  
 putting together drip tube assemblies  
 Jeff Riffe (TRS) off site for  
 supplies.

0800 Jeff Riffe (TRS) back onsite.

0810 COMED onsite

0940 TRS completes connecting electrode  
 cables to electrode heads as well

Location SE Rockford, IL Date wed 9/14/16  
 Project / Client Area 4 ERH RAO  
IEPA

as completes placing lugs on  
 cables as needed (either the lug  
 was missing or in bad shape).

1105 TRS begins placing ball valves w/  
 pex tubing attached to drip tubes  
 On G-2, G-3, G-4, G-5, F-3, F-4, F-5,  
 E-3, E-4, E-5, H-6, H-5, H-4, H-3, J-6, B-2,  
 B-3, B-4, L-2, L-3, L-4, D-3, D-4, D-5

1130 Spoke w/ John Brabs (COM Smith)  
 about gw sampling in Area 4.  
 Currently scheduled for first  
 week of October.

~~1145~~ TRS + Andrew Schamber offsite for  
 1215 lunch.

1308 Andrew Schamber back onsite

1320 TRS back onsite.

1326 TRS begins to connect drip  
 tubes to electrodes - connected  
 to ball valves.

1330 MKD Electric off site.

1458 TRS finishes connecting main  
 drip tube. Solenoids + tubing still  
 need to be connected to electrodes.  
 TRS doing site cleaning + getting ready for next week.

1555 TRS + Andrew Schamber offsite.



Location SE Rockford, IL Date Mon 9/19/16  
 Project / Client Area 4 extraction well maintenance system  
IEPA

0909 Andrew Schamber (Author) onsite  
 Personnel Brett Baker (Bodine)  
 weather 85°F Sunny forecast 90's Sunny  
 PPE Modified Level D

Plan Drain carbon tanks, open valves  
 and prepare for changing out  
 Carbon so that it can be transferred  
 to Winnebago Landfill.

000 John Grabs (CDM Smith) onsite  
 at Area 4. Talked about plan for  
 the week & what Bodine and TRS  
 have planned. ~~the~~

045 Brett Baker (Bodine) onsite. gave  
 short tour of the groundwater  
 extraction system and what  
 will be cleaned or pulled  
 starting tomorrow 9/20/16.

1125 Brett Baker (Bodine) offsite

1234 Brett Baker (Bodine) back onsite.

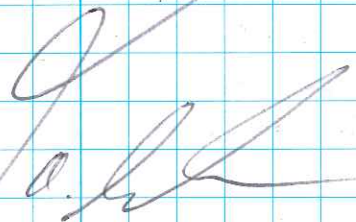
1315 Troy McFate (Bodine), John Grabs (CDM  
 Smith) & Brian Corrauth (IEPA) onsite  
 to check in. PLE may need to  
 be replaced on system.

1330 Troy, John, & Brian offsite

Location SE Rockford, IL Date Mon 9/19/16  
 Project / Client Area 4 extraction well maint. & system  
IEPA

1415 Brett Baker (Bodine) offsite  
 for supplies. No more  
 work happening on extraction  
 system today. Work will resume  
 at 0800 on 9/20/16.

1420 Andrew Schamber offsite

  
 9/19/16

Location SE Rockford, IL Date Tues 9/20/16  
 Project / Client Area 4 Extraction System Maint.  
IEPA

0700 Andrew Schamber (Author) onsite.  
 Personnel Brett Baker (Bodine), Rick (Bodine)  
 Weather sunny 65°F forecast 85°F partly  
 cloudy

PPE Modified Level D

Plan Change out carbon in gas extraction  
 system. Spent carbon will be transferred  
 to Winnebago Landfill + new carbon  
 will be installed.

0845 Brett Baker + Rick offsite to  
 measure playground at Area 7. Bodine  
 pump truck shows up at system.

0913 Brett Baker + Rick back onsite.

0955 Brad (Bodine) onsite

1000 Bodine begins to pump out carbon  
 from first tank.

1105 Finished vacuuming carbon from  
 first tank. Moves on to next +  
 tank.

1145 Bodine finishes pumping out carbon  
 from tanks.

1200 Bodine + Andrew Schamber offsite  
 for lunch

1300 Bodine + Andrew Schamber back onsite.

Location SE Rockford, IL Date Tues 9/20/16  
 Project / Client Area 4 Extraction Sys. Maint.  
IEPA

1305 Bodine adding first bag  
 of activated carbon to first  
 tank

1309 Bodine adding second bag  
 of activated carbon to second  
 tank

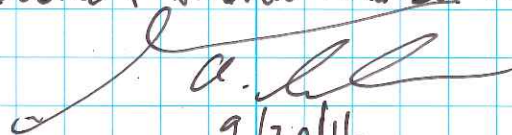
1315 Bodine is now splitting the 3<sup>rd</sup>  
~~last~~ bag between the 2  
 tanks

1327 Bodine finishes loading tanks  
 w/ carbon. Brad (Bodine)  
 back onsite w/ pump truck

1330 Bodine connecting water hose  
 + meter to hydrant in order to  
 fill up both tanks.

1345 Bodine pumped water out of  
 main ~~line~~ influent line in prep  
 for tomorrow. Now they are  
 pumping from oil water separator  
 into pump truck.

1615 Bodine + Andrew Schamber offsite

  
 9/20/16



Location SE Rockford, IL Date wed 9/21/16  
 Project / Client Area 4 Extraction Sys. maint  
IEPA


- 0730 Andrew Schamber (Author) onsite.  
 Personnel Brett Baker (Bodine), Rick (Bodine),  
 Randy (Midwest Mechanical)  
 weather 67°F cloudy, rain earlier, forecast  
 high mid 80's chance of rain in  
 afternoon  
 PPE Modified level D  
 Plan Finish cleaning air stripper, OWS system.  
 Includes scraping air stripper trays,  
 spraying down air stripper & spraying  
 down OWS. EX-003 will be pulled  
 and taken offsite for cleaning. TRS  
 plans (hopefully) to place cooling  
 loop down EX-003. Influent line  
 from vault to extraction system  
 will be pigged & flushed.  
 0730 Randy (Midwest Mechanical) & Bodine  
 crew already onsite. Randy is taking  
 apart valves in vault in order to  
 flush influent line. Bodine crew  
 is starting to spray down AS &  
 OWS.  
 0902 Bodine begins to pig line using a  
 foam pig & air compressor.

Location SE Rockford, IL Date wed 9/21/16 99  
 Project / Client Area 4 Extraction Sys. maint.

- 0930 Spoke w/ Brad Morris about  
 TRS's schedule. They will be  
 on site today 9/21 around noon.  
 Spoke w/ Brett (Bodine) and  
 Bodine CPM, & TRS will talk  
 about placement of cooling loop.  
 Bloyer well is onsite to pull  
 EX-003.  
 0934 Measured pump from TOC:  
 top of shroud - 35' ~~from~~ from TOC  
 top of pump intake - 37' from TOC  
 Bottom of shroud - 40' from TOC  
 Bottom of well - 42.5' from TOC  
 1145 Bodine & Andrew Schamber  
 offsite for lunch  
 1231 Andrew Schamber back onsite  
 at Area 4. TRS onsite  
 unloading equipment. TRS  
 plans on installing cooling  
 loop on Tuesday of next  
 week when Bodine plans to  
 reinstall pump.  
 1310 TRS starts placing solenoids  
 next to ~~well~~ <sup>electrode</sup> that get solenoids  
 M5, M6, L6, L5, L4, K3, K4, K5, K6, J3, J4, J5, K7, A6

Location SE Rockford, IL Date wed 9/21/16  
 Project / Client Area 4  
IEPA

1600 Andrew Schamber + TRS offsite

  
 9/21/16

Location SE Rockford, IL Date thurs 9/22/16  
 Project / Client Area 4 ERH RAO  
IEPA

0700- Andrew Schamber (Author)  
 onsite.

Personnel Jeff R. He (TRS), Kevin Rille  
 (TRS), Ted Hughley (TRS), Alex  
 Joss (COM Smith)

Weather 65°F cloudy forecast 86°F  
 Cloudy

PPE Modified Level D

Plan PCU, cooling tower, blower, and  
 various other equipment will  
 be delivered today and placed  
 via crane. MKB electricians  
 on site to run wire through  
 conduit and up power pole.

0745 Crane showed up onsite.  
 TRS moving various things around  
 the site to prepare for delivery  
 of equipment.

0830 PCU arrives onsite.

0910 Crane needed to be moved  
 to inside of the gate.

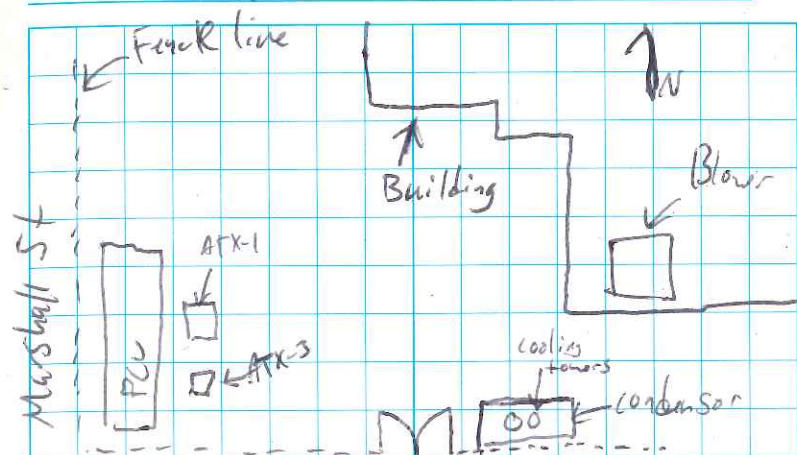
1021 Crane moved into place by  
 creative crane + rigging. Getting  
 ready to place PCU. John Grabs (COM  
 Smith) onsite.



Location SE Rockford, IL Date thurs 9/22/16  
 Project / Client Area 4 ERH RAO  
IEPA

- 1035 Stands for RTD boxes delivered to the site.
- 1043 PCU placed in SW corner of property within fence. PCU placed on 2x4's for support.  
 PCU model number: PCU 2000-5  
 Supply voltage: 12,470/13,200/13,800V  
 60 Hz
- 1100 MKD Electric starting to drop wire from power pole through conduit + into bottom of PCU.
- 1105 John Grabs (CDM Smith) off site
- 1140 TRS + Andrew Schamber offsite for lunch.
- 1305 Andrew Schamber + Alex Joss (CDM Smith) back onsite. Truck is here delivering equipment + a spool of electrode cable. Blower is being placed inside building near garage door.
- 1325 2 Auto transformers being placed on the East side of PCU.  
 ATX-1 Dry type transformer class AA

Location SE Rockford, IL Date thurs 9/22  
 Project / Client Area 4 ERH RAO  
IEPA



electrode cable twice the size of what plan called for 350 cable (up to 500A)

- 1345 TRS moved the blower to inside of the garage.
- 1517 Condensor + cooling towers arrive on site via semi.
- 1547 Condensor + cooling towers placed onsite.
- 1645 TRS is changing oil in blower + cleaning copper fittings inside ~~PCU~~ PCU. Creative Crane getting ready to mobilize offsite.
- 1745 Andrew Schamber + TRS offsite.

Location SE Rockford, IL Date Fri 9/23  
 Project / Client Area 4 ERH RAO  
IEPA

0720 Andrew Schamber (Author) + TRS  
 onsite

Personnel Jeff Riffe (TRS), Kevin R. He (TRS),  
 Ted Hughley (TRS)

Weather Cloudy 65°F forecast cloudy  
 74°F

PPE Modified level D

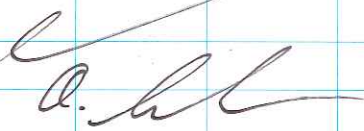
Plan Start connections of equipment.  
 Run electrodes

0845 TRS changes configuration in PCU  
 from a "Y" config to a "D" config.  
 Now installing hoods on East side  
 of PCU.

1045 Andrew Schamber offsite for  
 supplies

1107 Andrew Schamber back onsite.

1200 TRS + Andrew Schamber offsite

  
 9/23/16

Location SE Rockford, IL Date Mon 9/26  
 Project / Client Area 4 ERH RAO  
IEPA

0920 Andrew Schamber (Author) onsite  
 Personnel Jeff Riffe (TRS), Brad Morris  
 (TRS), Ted Hughley (TRS)

Weather Sunny Breezy 62°F forecast

Sunny 76°F  
 PPE Modified level D

Plan Unload equipment. Mini excavator  
 will be mobilized offsite. TRS  
 plans to start making connections  
 to equipment + lay remaining  
 electrode cable

1130 Jeff Riffe (TRS) onsite. Brad  
 Morris about 30 minutes away.

1140 Jeff Riffe (TRS) unloading truck.  
 Unloaded small spool of electrode  
 cable (taken from site in Brownsburg,  
 IN).

~~1155 Brad Morris~~

1145 John Grabs (CDM Smith) onsite.

1157 Brad Morris (TRS) onsite. John  
 Grabs (CDM Smith) offsite.

1210 TRS + Andrew Schamber offsite for  
 lunch

1315 TRS + Andrew Schamber back onsite.



Location SE Rockford, IL Date Mon 9/26/16  
 Project / Client Area 4 ERH RAO  
IEPA

1357 Ted Hughley onsite.  
 (TRS)

1405 TRS beginning connection at both cooling towers to condensor unit.

1434 United Rentals onsite to pick up mini excavator & skid steer.

1447 TRS ran electrode (Type W 350) cable from blower to PCU.

1531 TRS starting to connect electrode cable to PCU starting w/ 2 short "jumper" cables attached to very far left side of Red panel on PCU. Jumper cables connected at PCU & run to each transformer. <sup>2 jumper cables (1 to each transformer) from each phase panel in PCU (3 phase)</sup>

1627 UPS delivers packages for TRS. (1 box)

1704 Electrode cables from "L" & "M" electrode rows were run to ~~the~~ PCU. Electrode cables were connected to a C505L amp trap then landed on its respective phase plate (Red, Blue, or yellow).

1745 TRS & Andrew Schamber offsite

Q.

9/26/16

Location SE Rockford, IL Date Tues 9/27/16  
 Project / Client Area 4 ERH RAO  
IEPA

0705 Andrew Schamber (Author) onsite  
 Personnel Ted Hughley (TRS), Brad Morris (TRS), Jeff Riffe (TRS)

Weather cool, sunny 49°F, forecast partly cloudy 65°F

PPE Mod.ified Level D

Plan TRS plans to install cooling loop in EX-003. More cable will be landed on PCU or transformers from electrodes. If time allows, CPUC pipe will be connected from blower to condensor unit.

Mike Jackson (Jackson Welding) will be onsite today to weld the bolt back onto M6.

0825 Mike Jackson (Jackson Welding) onsite. TRS beginning to pull cable & land it on the PCU starting w/ Row "K".

0850 Bodine onsite working on groundwater extraction system. TRS beginning to put together their cooling loop to be placed in EX-003.

0901 Mike Jackson (Jackson Welding) offsite.

Location SE Rockford, IL Date Tues 9/27/16  
 Project / Client Area 4 ERH RAO  
IEPA

- 0903 Cooling loop TRS plans on installing in EX-003 is made up of 3/4" PEX from 0 to 35 ft bgs then goes down to 1/2" PEX from 35' to 425' bgs.
- 0926 Bloyer well onsite pulling pump from EX-001 and ~~repl~~ placing pump back in EX-003 TRS placed cooling loop in EX-003
- 1023 COMED onsite to energize power pole near PCU.
- 1035 COMED offsite. Just taking a look at the line. Will be back later this week to work on the pole.
- 1140 TRS + Andrew Schamber offsite for lunch
- 1251 TRS + Andrew Schamber back onsite.
- ① TRS begins connecting cables to PCU and/or transformers.
- 1402 UPS delivers 4 boxes for TRS.
- 1345 Spoke w/ Josh Grabs (CDM Smith) informed him that TRS plans initial start up of system on October 5, 2016 (Wednesday).
- 1600 9 bolts on electrode heads popped off. Similar to one at M6. Will need to renew bolts to electrode head before start up.

Location SE Rockford, IL Date Tues 9/27/16  
 Project / Client Area 4 ERH RAO  
IEPA

- 1510 welder will be onsite later this week to fix electrode heads
- ① 1517 TRS + Andrew Schamber offsite for day.

U. L.  
 9/27/16



110 Location SE Rockford, IL Date wed 9/28/16  
Project / Client Area 4 ERH DAO  
IEPA

0705 Andrew Schamber (Author) onsite  
Personnel Jeff Riffe (TRS), Ted Hughley (TRS),  
Brad Morris (TRS)

Weather partly cloudy 51°F, forecast  
62° partly cloudy

PPE Modified level D

Plan TRS plans to run piping from  
condensor to connect to recovery tubes  
connected to electrodes. Cooling loop  
will be installed & TRS plans to  
plan out how to handle bolts on  
electrode heads

0820 TRS begins to lay out pipe for recovery  
piping. Jeff Riffe (TRS) offsite for  
supplies.

0917 Jeff Riffe (TRS) back onsite. Placing  
flanges on blower inside of building.  
0950 Mike Jackson (Jackson welding) onsite  
to discuss possible alts. to electrode  
head bolt issues.

1005 Mike Jackson offsite. Will be back  
tomorrow (9/29/16) to start welding bolts  
on electrode heads.

1140 TRS & Andrew Schamber offsite for lunch.

111 Location SE Rockford, IL Date wed 9/28/16  
Project / Client AREA 4 ERH DAO  
IEPA

1230 Andrew Schamber back onsite

1242 TRS back onsite.

1245 Ted Hughley offsite to pick up  
6AL tanks at another site. TRS  
begins connecting more PVC pipe.

1345 ComED onsite.

1405 TRS finishes running PVC piping (6")  
between condensor & blower. Start-  
ing to put together the blower  
line which runs from the trench  
to the condensor unit.

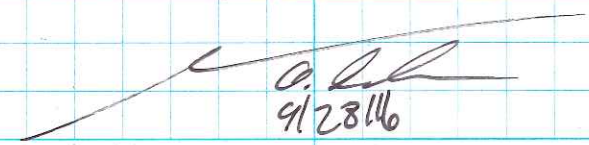
1430 ComED offsite. All lines are  
~~now~~ energized.

1458 TRS begins constructing stands from  
fiberglass wall mounting material  
for 6AL vessels.

1545 Not stands for 6AL but stands  
to hold boxes that control temp.  
& drip operations.

1620 UPS delivers 1 box for TRS.

1731 Andrew Schamber & TRS offsite

  
9/28/16



Location SE Rockford, IL Date Thurs 9/29/16  
 Project / Client Area 4 ERH RAO  
IEPA

0705 Andrew Schamber (Author) onsite  
 Personnel Ted Hughes (TRS), Brad Morris (TRS),  
 Jeff Riffe (TRS)

Weather cloudy, cool, 58°F Forecast 69°F  
~~partly~~ cloudy

PPE Modified Level D

Plan Mike Jackson will be onsite to  
 fix electrode heads. TRS plans to  
 run blowdown line from trench to  
 condenser unit, run drip line, place  
 probes in wells, etc... Myraid of  
 small things to do today before  
 start up next week.

0810 TRS begins to put together blowdown  
 line which runs from the trench  
 across the site to the condenser  
 unit (2" CPVC).

0821 Mike Jackson (Jackson welding) onsite.

0836 Mike starting on E5.

0845 Jeff got the wrong screws. Jeff  
 offsite for correct screws.

0915 Jeff back onsite. Mike starts grinding  
 on bolt to be welded onto electrode  
 head

Location SE Rockford, IL Date Thurs 9/29  
 Project / Client Area 4 ERH RAO  
IEPA

0900 Mike finished E5 moved onto  
 E4. Rest of the electrodes:

-E3

-F4

-H6

-J5

-H3

-J3

-K6

Electrodes are being top welded.  
 1020 TRS begins to pipe together the  
 primary & secondary LGAL  
 vessels to the condenser unit.

1140 TRS finishes piping LGAL  
 vessels to condenser unit.

1149 Mike Jackson offsite.

1215 Andrew Schamber & TRS offsite  
 for lunch

1300 Andrew Schamber back onsite

1320 TRS back onsite.

1405 Electrical issues w/ condenser unit.

1417 Issue fixed. TRS bump testing the  
 following equipment:

- cooling tower fans
- blower motor



Location SE Rockford, IL Date Thurs 9/29/16Project / Client Area 4 ERH RAOIEPA

1531 TRS begins connecting ~~main~~ remaining drip line connecting the electrode field to the condenser unit.

1701 TRS + Andrew Schamber offsite for day

A. Schamber

9/29/16

Location SE Rockford, IL Date Fri 9/30/16Project / Client Area 4 ERH RAOIEPA

0715 Andrew Schamber (Author) onsite.  
Personnel Ted Hughley (TRS), Jeff Eitte (TRS), Brad Morris (TRS)

Weather 60° Cloudy, misty forecast mid 60's

PPE Cloudy  
 Mobilized Level D

Plan General site cleaning & maintenance.

TRS plans to cut out splices in cable & replace them w/ butt splices & heat shrink.

0905 TRS begins to connect remaining drip tube system. 3/4" PEX was connected to electrode field network near 6" vapor recovery pipe at building & ran along pipe to connect to condenser unit.

1056 Over sleeve was replaced & grouted into place over M6.

1109 Ted Hughley (TRS) offsite.

1206 Andrew Schamber & TRS offsite for day.

A. Schamber

9/30/16

Location SE Rockford, IL Date Mon 10/3/16Project / Client Area 4 ERH RAO0 IEPA

0945 Andrew Schamber (Author) onsite.  
 Personnel Jeff Riffe (TRS), Chris Thomas (TRS),  
Brad Morris (TRS)

Weather 66°F Sunny, forecast 76°F Sunny

Plan Multiple tasks to get ready for  
 System startup. Install + program  
 new ~~new~~ camera monitoring system.  
 Little thing around site, connect blower  
 line to condenser.

1131 Jeff Riffe (TRS) onsite.

1142 Jeff begins to construct another  
 stand from fiberglass wall racking  
 to hold a control box (interlock box)

1205 John brabs (CDM Smith) onsite earlier  
 this morning for pre treatment ground-  
 water sampling.

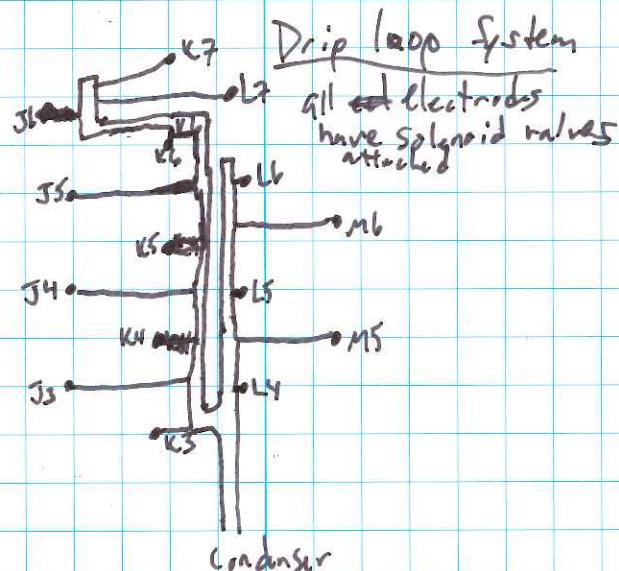
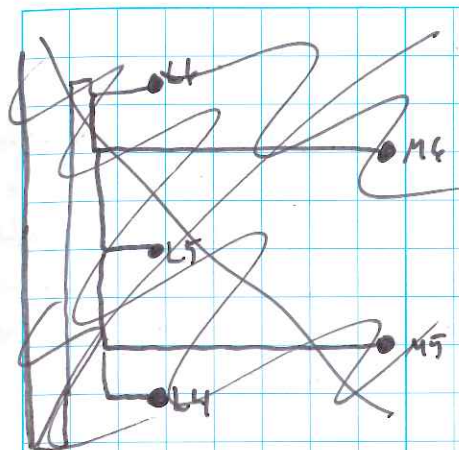
1306 Jeff finishes constructing interlock  
 box.

1316 Jeff connects drip + solenoid to J6,  
 K7, + L7

1410 TRS offsite for lunch. Andrew  
 Schamber goes to help John b. w/  
 gw sampling

1515 TRS back onsite.

1546 TRS placed vapor monitoring ports on  
 VP wells.

Location SE Rockford, IL Date Mon 10/3/16Project / Client Area 4 ERH RAOIEPA



Location SE Rockford, IL Date mon 10/3/16  
 Project / Client Area 4 ERH RAO  
IEPA

- 1626 TRS connecting monitoring cables to control box from PCU. Oversleeve for Mb is drilled + tubes connected. Interlock cable run throughout site + terminates at interlock box. Cable is for checks + balances of network so if something isn't working the well network is shut down.
- 1830 TRS offsite
- 1850 Andrew Schamber offsite.

A. Schamber  
 10/3/16

Location SE Rockford, IL Date tues 10/4/16  
 Project / Client Area 4 ERH RAO  
IEPA

- 0705 Andrew Schamber (Author) onsite.
- Personnel Jeff Rife (TRS), Brad Morris (TRS), Amy Wagner (TRS), Miller Dave (TRS), Jason (TRS)
- Weather 64°F cloudy forecast low 70's partly cloudy
- PPE Modified Level D
- Plan Place LBAC in LBAC containers. Run 1" PEX for drip into condenser unit (North side). Grout in oversleeves over ~~AS temp~~ wells. Start looking at temperature start up check list. Dave (TRS) is onsite to continue working on the programming involved inside of PCU unit.
- 0816 TRS placing carbon in LBAC vessels. Also working on computer programming in PCU. 3.75 bags per vessel.
- 0836 TRS finishes connecting drip tube loop to the condenser unit.

SE Rockford, IL Date Tues 10/4/16

Area 4 ERH RAO

IEPA

- 0900 TRS finishes blowdown line construction. 2" CPVC comes from trench, runs across the site then transitions to 1" CPVC pipe at north end of condenser unit.
- 0915 TRS placing PVC oversleeves around GWP wells. all oversleeves will be grouted in.
- 0925 TRS begins to mix grout. Amy Wagner (TRS) onsite.
- 0935 FedEx delivers box for TRS.
- 1010 TRS boards up windows inside of building to help w/ noise control from blower unit.
- 1030 TRS ~~is~~ starts installing vapor ~~pressure~~ pressure gauges. & pitot tubes.
- 1042 Pitot tubes along with monitors are placed in each of the 6" CPVC pipes coming from blower. Pitot tubes are placed just <sup>outside</sup> inside of building near garage door.
- 1121 TRS begins placing high voltage stickers on electrode head caps

SE Rockford, IL Date Tues 10/4/16

Area 4 ERH RAO

IEPA

- 1152 TRS & Andrew Schamber offsite for lunch.
- 1317 TRS back onsite.
- 1341 TRS continues to bolt boards over windows in building.
- 1350 TRS measures depth to water in GWP-L4 (DTW: 27.4' from TOC). Placing transducer down to 42' bgs.
- 1400 DTW: 27.2' in GWP-K3 (from <sup>ground</sup> surf.) Transducer set to 41' bgs  
DTB: 42.7' bgs  
transducer set 1' above where it says in plans because of depth of well.
- 1409 GWP-b5  
DTW: 26.93' bgs  
DTB: 43.1' bgs  
trans. set @: 42' bgs
- 1415 GWP-H6  
DTW: 27.53' bgs  
DTB: 44.08' bgs  
trans. set @: 42' bgs



Location SE Rockford, IL Date Tues 10/4/16  
 Project / Client Area 4 ERH RAO  
IEPA

- 1430 GWP-F3  
 DTW: 26.12' bgs  
 ITB: 44.55' bgs  
 trans. set @: 42' bgs
- 1620 TRS begins connecting solenoid cables to drip control box.
- 1730 TRS + Andrew Schamber offsite

  
 10/4/16

Location SE Rockford, IL Date wed 10/5/16  
 Project / Client Area 4 ERH RAO  
IEPA

- 0705 Andrew Schamber (Author) onsite  
Personnel Brad Morris (TRS), Amy Wagner (TRS), Jeff Riffe (TRS), Dave Milan (TRS)
- Weather 65°F Partly cloudy, forecast 77°F partly cloudy
- PPE Modified Level D
- Plan TRS plans to begin going through start up check list. Dave also plans to continue to write program for remote login to system.
- 0825 TRS paints well covers with flex seal spray paint. wells located in neighbors yard.
- 0853 Roll off for VbAL arrives onsite 20' x 8'.
- 0945 TRS beginning connections to VbAL (Vapor Granular Activated Carbon) from condenser unit.
- 1104 90° elbows made of pvc were placed on all GWP wells, to keep water from getting into well

Location SE Rockford, IL Date wed 10/5/16Project / Client Area 4 ERH RABIEPA

- 1146 TRS building racks to hold an electrical box that will house transducer ends.
- 1216 TRS + Andrew Schamber offsite for lunch.
- 1320 TRS + Andrew Schamber back onsite. Jeff making a second rack for electrical box.
- 1425 TRS constructing an antenna to place on top of PCU.
- 1635 TRS connected 1" PEX to cooling loop (placed in EX-003) coming out of trench. Will be connected to condenser unit tomorrow after fittings are purchased.
- 1655 UPS delivers 1 box for TRS.
- 17 TRS + Andrew Schamber offsite for day.

  
 10/5/16
Location SE Rockford, IL Date Thurs 10/6Project / Client Area 4 ERH RABIEPA

- 0710 Andrew Schamber (Author) onsite. Personnel Brad Morris (TRS), Jeff Ritte (TRS), Amy Wagner (TRS), Jason (TRS), Greg Knight (TRS)
- Weather Rainy, cool, 58°F, forecast mid 70's chance of rain
- PPE Modified level D
- Plan Continue on w/ start up check list. Add water to L/LAL vessels. Possibly start voltage testing around the site. Run extension cords to ~~ELV~~ electrical boxes. ~~pressure inter gauge~~
- 0755 TRS installed tubing from pilot tubes (1 in blower in 6" pipe + 1 in blower out 6" pipe) to pressure differential boxes.
- 0830 TRS installed tubing from vapor pressure ~~box~~ control box to 4" CPVC ~~pipe~~ recovery pipe near trench. Vapor pressure control box shuts down system if pressure drops due to blower malfunction.

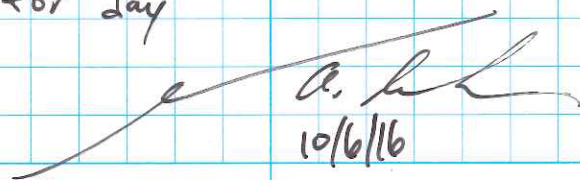


126 Location SE Rockford, IL Date thurs 10/6/16  
Project / Client Area 4 ERH RAO  
IEPA

- 0841 TRS begins to check switcher, valves, & floats inside of condenser unit by adding water to various tanks.
- 0925 TRS filled both the primary & secondary knockout tanks in condenser unit. They filled it past the low level, High level, and High High level floats to check alarms & equipment function.
- 1004 7 bags of activated carbon delivered to site.
- 1134 TRS fills second LbAL vessel w/ carbon. 3.5 bags placed inside.
- 1142 Troy McFate (Bodine) onsite.
- 1215 Andrew Schamber, TRS, and Troy McFate offsite.
- 1315 Andrew Schamber & TRS back onsite.
- 1350 Chris Thomas (TRS) onsite.
- 1436 TRS finishes first part of the start up checklist.

127 Location SE Rockford, IL Date thurs 10/6/16  
Project / Client Area 4 ERH RAO  
IEPA

- 1508 TRS closing valves on all electrodes on the gas extraction & line. In preparation of voltage testing.
- 1530 TRS begins voltage testing. 130V.
- 1600 Voltage test complete. few trouble areas. Readings ranged from 0V to 40V. trouble areas include:
- pipe inside of building - 32V
  - pipe on J4 - 40V
  - whole grass area on the west side of building had various readings over 10V. Nothing can be higher than 10V.
  - ground inside of building
- 1720 TRS built & installed Vent Stack on NW corner of condenser unit.
- 1815 TRS & Andrew Schamber offsite for day

  
10/6/16



SE Rockford, IL

Fri 10/7/16

Area 4 ERH RAO

IEPA

0710 Andrew Schamber (Author) onsite.  
Personnel Jeff Riffe (TRS), Jason (TRS),  
 Brad Morris (TRS), Chris Thomas (TRS),  
 Dave Milan (TRS), Greg Knight (TRS)

Weather 64°F mostly cloudy forecast  
 mid 60's partly cloudy skies

PPE Modified level D

Plan Start mitigating voltage issues  
 in Zone 2, ground inside of  
 building. Extension of a few  
 RTD's, general site cleaning  
 for weekend.

0815 TRS beginning to insulate fittings on  
 Zone 2 electrodes ("J" + "K" rows)

0900 TRS finishes insulating fittings in  
 Zone 2. Jeff ties wire across  
 gate to complete fence circuit  
 and ground it.

1035 TRS gluing adaptors onto V6AC  
 roll off to connect tubing coming  
 from condenser unit.

1306 Andrew Schamber + TRS offsite

*a. h.*  
 10/7/16

SE Rockford, IL

Mon 10/10/16

Area 4 ERH RAO

IEPA

0915 Andrew Schamber (Author)  
 onsite

Personnel Brad Morris (TRS), Chris  
 Thomas (TRS), Jeff Riffe (TRS)

Weather Sunny 61°F forecast  
 sunny mid 70's

PPE Modified level D

Plan Mitigate more voltage issues  
 + get ready for system  
 start up on Tues 10/11/16.

0955 TRS beginning to make final  
 connections from V6AC to  
 condenser unit.

1000 UPS delivers 1 box for TRS.

1006 Dave Milan (TRS) onsite.

1120 Brett Baker (Bodine) onsite.

1130 Brett Baker (Bodine) offsite.

1135 TRS begins testing V6AC  
 system. Pulled water through  
 blower and into vessel. Investig-  
 ating now. Pump was off.  
 problem solved

1215 Andrew Schamber + TRS offsite  
 for lunch



Location SE Rockford, IL Date Mon 10/10/16  
 Project / Client Area 4 ERH RAO  
IEPA

- 1315 Andrew Schamber & TRS back onside.
- 1345 Jeff Riffe (TRS) onside.
- 1435 TRS replaced 3/4" Rex for cooling loop w/ 1" PEX. Added valves at water in/out on North side of condenser ~~so~~ so that fit connects to drip loop.
- 1500 Cooling loop now runs down through side along blowdown line where it connects to the line coming out of trench.
- 1510 TRS able checking voltage readings in street. Voltage test was done using a metal shunt w/ a metal plate attached at the bottom & a volt meter.
- 1600 Voltage test complete
- grout seals still need to be sprayed w/ flex seal (9-11V)
  - abandoned gun well, onside will need a rubber mat placed on top. (9V)
  - ball valves on electrodes are no longer an issue.
  - concrete over electrode heads along W side

Location SE Rockford, IL Date Mon 10/10/16  
 Project / Client Area 4 ERH RAO  
IEPA

- of Marshall St need to be painted w/ flex seal. (8-9V).
- ~~14~~ Up to 10V allowed inside of fence & up to 5V allowed outside of fence. TRS tested both wet & dry instances.
- 1745 Andrew Schamber & TRS offsite for day

A. Riffe  
 10/10/16

Location SE Rockford, IL Date 10/11/16 tues.  
 Project / Client Area 4 ERH RAO  
IEPA

0705 Andrew Schamber (Author) onsite  
 Personnel Brad Morris (TRS), Jeff R. Reel (TRS),  
 Dave Milan (TRS), Chris Thomas (TRS)

Weather 56° cloudy forecast mid 60's  
 partly cloudy

PPE Modified Level D

Plan Get ready for operational readiness  
 review. finish voltage mitigation.  
 replace RTDs in Temperature well.  
 Install secondary containment  
 underneath condenser unit.

0750 TRS sprays concrete over & concrete  
 along west side of Marshall St.  
 (concrete squares over B2, B3, B4)

0820 TRS erects secondary containment  
 underneath condenser unit.

0835 TRS bleeding air out of cooling  
 loop line.

0910 FedEx delivers a cooler for TRS.

0920 TRS installed ball valves on return  
 & supply lines from condenser to  
 VGAL.

0950 John Grabs (CDM Smith) onsite.

1015 Brett Baker (Bodine) onsite.

Location SE Rockford, IL Date tues 10/11/16  
 Project / Client Area 4 ERH RAO  
IEPA

1030 Karen L. Kirchner (EPA) onsite.

1040 Mike Haggitt (IEPA) onsite

1050 Troy McFale (Bodine) onsite.

1106 TRS replacing RTDs in TMP.

1245 - Everyone offsite for lunch.  
 Operational Readiness review  
 complete. IEPA will submit  
 letter so that TRS can  
 begin system operation as early  
 as 10/12/16.

1340 John Grabs (CDM Smith), Andrew  
 Schamber (CDM Smith), Brad  
 Morris (TRS), Chris Thomas (TRS)  
 back onsite.

1440 TRS sprays grout on zone 1 &  
 zone 2 electrodes (electrodes  
 in building & in grassy area).  
 Also reapply flex seal on  
 concrete out along west side  
 of Marshall St.

1617 TRS still having voltage issues  
 in west side of Marshall St.  
 More alternatives will be discussed.



Location SE Rockford, IL Date Tues 10/4/16  
 Project / Client Area 4 ERH RAO  
IEPA

1715 TRS painted concrete over B2, B3, B4 with Rustoleum Leak Seal to mitigate voltage issues. Will let dry overnight + take readings in morning

1745 Andrew Schamber + TRS offsite for day

A. Schamber  
 10/11/16

Location SE Rockford, IL Date Wed 10/12/16  
 Project / Client Area 4 ERH RAO  
IEPA

0700 Andrew Schamber (Author)  
 on site

Personnel Jeff Ritte (TRS), Brad Morris (TRS)

Weather Cloudy, 60°F forecast mid 60's chance of rain

PPE Modified Level D

Plan Mitigate voltage issues in street. update security system. Evogan will be onsite to fix leaks in VGL vessel.

0725 Leak seal worked!! TRS will have to order more and apply next week. will take electrodes in street offline and begin system w/o them running.

0800 TRS installs temperature probe in blower out pipe in order to record temp. for mass calcs.

0830 TRS beginning to take B, C, D rows offline by unconnecting electrode cables from PLU.

0852 Electrode rows B, C, D successfully of line

Location SE Rockford, IL Date wed 10/12/16  
 Project / Client Area 4 ERH RAO  
IEPA

- 0902 TRS installed RTD (temp probe) in stack. Brett Baker (Bodine) + Troy Metake (Bodine) onsite. TRS sends water down blowdown line to see if everything works.
- 0945 Evogue onsite to repair leaks in V6AC rolloff.
- 0950 Evogue is applying an epoxy over plates on north + south side of rolloff to seal air leaks.
- 1025 TRS installs Wifi antennas on top of PCU near 360° camera.
- 1427 Evogue offsite. Epoxy didn't work. They will have to come back later this week to replace plate + gasket on both ends of rolloff.
- 1440 TRS installed jumper + some hardware in control panel inside of PCU for security system. Still waiting on information before security system is operational.
- 1730 TRS finished ~90% of security updates. Will finish in morning. TRS + Andrew Schamber offsite for day

*[Signature]*  
 10/12/16

Location SE Rockford, IL Date thurs 10/13  
 Project / Client Area 4 ERH RAO  
IEPA

- 0705 Andrew Schamber (Author) onsite  
 Personnel Brad Morris (TRS)  
 Weather 38°F Sunny, cold forecast mid 50's sunny
- PPE Modified level D  
 Plan Finish security <sup>AS</sup> updates + make sure sensors installed on site work. Start system at 100% operation + start collecting data for spreadsheets.
- 0730 Brad Morris (TRS) begins testing movement sensors on site. Brad going to start system to test sensors. Here we go.
- 0745 Brad M. performing voltage tests at PCU + ATX-1 + ATX-2 near electrode lugs landed on plates.
- 1030 John Grabs (ADM Smith) onsite
- 1115 John Grabs offsite.
- 1200 Security System up and running. Power was not being supplied to interlock. Now PCU shuts off when security system is tripped



Location SE Rockford, IL Date Thurs. 10/13/16  
 Project / Client Area 4 ERH DAO  
IEPA

- 1220 TRS + Andrew Schamber off site for lunch  
 1330 TRS + Andrew Schamber back on site  
 1400 TRS changing ~~wire~~ cables to connect taps on PCU so that correct power is being supplied to field.  
 1445 TRS having voltage issues at PCU. Picking up voltage on phase plates when power isn't being supplied to plates. Troubleshooting now.  
 1710 Amy Wagner (TRS) offsite. Still can't figure out solution to issue.  
 1730 Andrew Schamber + TRS offsite for day

A. Schamber

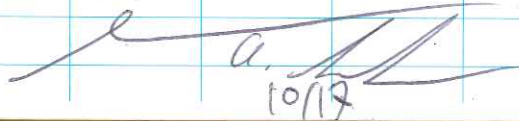
10/13/16

Location SE Rockford, IL Date Mon 10/17  
 Project / Client Area 4 ERH DAO  
DAO IEPA

- 0900 Andrew Schamber (Author) onsite  
 Personnel Brad Morris (TRS)  
 Weather cloudy, 71°F forecast  
 cloudy upper 70's  
 PPE Modified Level D  
 Plan Evogua will be onsite to seal leaks in rolloff by vacuuming out carbon to replace gasket & plate on both ends.  
 TRS fixed voltage issue on PCU on Fri. 10/14. A wire was loose in transformer 2 inside at PCU + sending current through entire enclosure. System ran all weekend w/ no issues + no oversight. TRS plans to get the street painted this week as well so that the electrodes in the street can be brought back online.  
 0950 Evogua onsite to seal ULAC rolloff  
 1005 Evogua plans to vacuum out carbon from top using a vac + a lift.

Location SE Rockford, IL Date Mon 10/17  
 Project / Client Area 4 ERH DAO  
IERA

- 1022 Brett Baker (Bobine) onsite. checked in w/ Brad about Bobine changing their bag filters on gas extraction system. That will be a weekly task.
- 1037 Brett Baker offsite.
- 1245 Evoqua finishes vacuuming carbon from vessel. Begins removing plates to replace gaskets.
- 1320 1 of the 2 gaskets is too small. Evoqua will replace the one that fits but still waiting on a response on how to handle the other gasket.
- 1335 Evoqua will have to be onsite again tomorrow to replace gaskets. The guys showing up tomorrow will have a large roll of matting to fit each hole.
- 415 Evoqua offsite. Will be back Tues 10/18.
- 1430 Andrew Schamber offsite.

  
 10/17

Location SE Rockford, IL Date Tues 10/25/16  
 Project / Client Area 4 ERH DAO  
IERA

- 0930 Andrew Schamber (Author) onsite
- Personnel Ted Highley (TRS), Brad Morris (TRS)
- Weather cloudy, cool, 47°F forecast  
 55°F cloudy
- PPE Modified level D
- Plan Check in w/ TRS & get progress update on site. Brian Conrath (IERA) will be here to inspect site.
- 0943 Checked in w/ Brad Morris about what has been happening in last week. TRS got the middle section of Marshall St. painted. Waiting till afternoon to paint the east side of street (as long as weather cooperates). Plan is to have ~~etc~~ electrodes in street in operation by Mon. 10/26. TRS plans to hard pipe hose coming from blower to VGL to eliminate noise issue.



Location SE Rockford, IL Date Tues 10/25/16Project / Client Area 4 ERH DAOIEPA

System is reporting good temp. increase (to date ~15° increase & throughout site since system startup).  
 1020 Brian Contrath ~~to~~ (IEPA) + Troy McFate (Bodie) onsite.  
 Brad Morris gives them tour of site and information about what the system is doing & operational data.

1115 Troy McFate (Bodie) off site.

TR5 begins to hard pipe connect from blower to VGAC rolloff.

1200 All personnel off site for lunch.

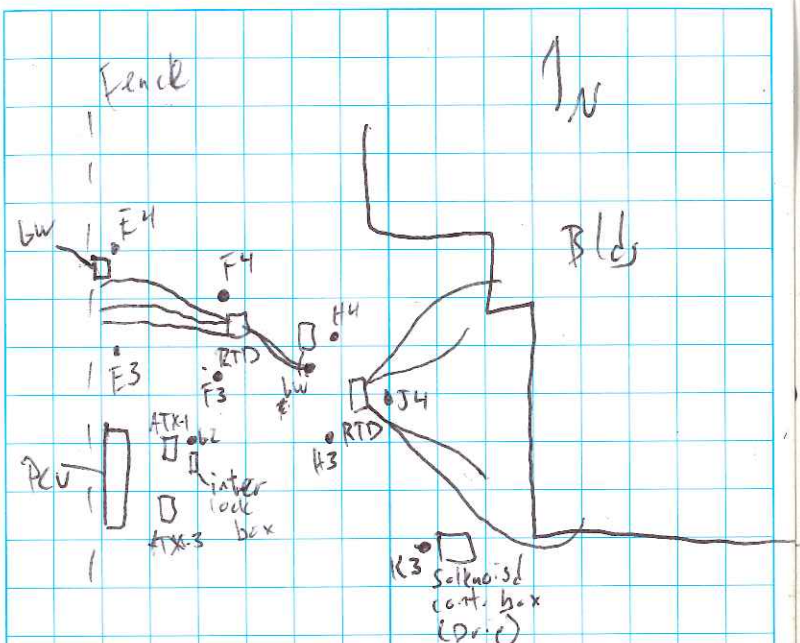
1255 All personnel back onsite.

1312 Brian Contrath off site.

1320 TR5 beginning to collect samples from pre/post LBAC vessel + pre/post VGAC.

1405 Andrew Schamber off site.

*A. Schamber*  
 10/25/16

Location SE Rockford, IL Date \_\_\_\_\_Project / Client Area 4 ERH DAOIEPA

BW boxes wire to 2-wire interface box located on N side of PCU which is then wired to PCU.

Location SE Rockford, IL Date Tues 11/1/16  
 Project / Client Area 4 ERH RAO  
IEPA

0930 Andrew Schamber (Author) onsite  
 Personnel Ted Highley (TRS)  
Weather Partly cloudy, 65°F forecast mid 70's  
 partly cloudy  
PPE Modified Level D  
Plan Check in on TRS and get  
 update on what has been happening  
 onsite since last week.  
 0945 Spoke w/ Ted. Electrodes in  
 street are still offline. Water  
 pools in street causing persistent  
 voltage issues. Marshall St  
 will hopefully be paved next  
 week & electrodes can then  
 be turned on w/o any harm  
 to public. Bolts popped off  
 of 4 electrodes (63, F5, J4, K4).  
 Mike Jackson (Jackson welding)  
 will be onsite today to fix  
 electrode heads. System is  
 running normally other than  
 cloudy turbid water being sent to  
 Bodine G&ET's system. Bag filters  
 having to be changed every other  
 day.

Location SE Rockford, IL Date \_\_\_\_\_  
 Project / Client Area 4 ERH RAO  
IEPA

1000 John Grabs (CDM Smith)  
 onsite. Spoke w/ Ted  
 about system.  
 1020 Andrew Schamber & John  
 Grabs offsite to Area  
 11 to look for MW's  
 1130 CDM Smith back onsite.  
 Mike Jackson (Jackson welding)  
 onsite.



Location \_\_\_\_\_ Date 10/21/11

Project / Client \_\_\_\_\_

- 0940 - START GEOPROBE GP318  
 0-1 FT - CONCRETE DEBRIS, DUST  
 1-4 FT - DARK BROWN TOPSOIL / CLAY  
 4-5 FT - LIGHT, FINE TO MEDIUM  
 GRAINED SAND ~ 5ppm  
 5-10 FT - SAME AS ABOVE ~ 100ppm  
 ODOR PRESENT @ 10 FT. VISIBLE  
 STAINING.  
 10-15 FT - SAME AS ABOVE ~ 250ppm  
 ODOR PRESENT @ 15 FT. VISIBLE  
 STAINING.  
 COLLECT VOC SOIL SAMPLE  
 A4-GP318-111021  
 A4-GP318-111021(D)  
 1010 - DECON / PACK UP.  
 1050 - COMPUTER BROKEN. LEAVE  
 FOR CHICAGO OFFICE TO  
 DO FORMS ONLINE.  
 1055 - RELINQUISH LOG BOOK TO  
 JOHN CRABS.

Location SE Rockford, IL Date 11/10/16Project / Client Area 4 ERH Operation U. sitIEPA

0945 Andrea Schamber (Author)  
 onsite

Weather Sunny, 51°F forecast  
 m. l. 6.0's Sunny

PPE Modified Level D

Personnel Brad Morris (TRS)

Plan Check in w/ TRS about  
 progress being made on site  
 and make sure things are  
 getting accomplished.

0955 Spoke w/ Brad about how  
 things were going. LbAC  
 was taken offline and 2 25  
 micron bag filters were  
 placed in series before water  
 is sent to BET's system.  
 Marshall street was milled  
 & asphalted starting Friday  
 11/4/16 and finished on  
 Wednesday 11/9/16. The entire  
 net work of trenches was paved  
 all the way to the bridge  
 located just North of the  
 extraction vault. Brad is



Location SE Rockford, IL Date 11/10/16  
 Project / Client Area 4 EDH operations visit  
 IEPA

Currently getting the street electrodes back online + will do one more round of voltage testing in the street before the system is left unattended. PID readings from MPE electrodes will begin being collected most likely next week + the first weekly rpt is being revised by Chris Thomas (TRS) at the moment to address concerns that were ~~laid~~ laid out by CDM + the IEPA.

1020 Brett Baker (Bodine), Troy McFate (Bodine) + Brian Conrath (IEPA) onsite. Discusses w/ Brad about changes that are being made to the system. TRS plans to reroute blowdown water through filters, then LBAC, then run up to cooling towers so that it reduces the amount of water being sent to BETS system. Bodine + TRS seem to be on same page. Bodine plans to flush their carbon on Monday of next week as well as

Location SE Rockford, IL Date 11/10/16  
 Project / Client Area 4 EDH operations visit  
 IEPA

Clean their oil water separator. That should hopefully help keep the system online.

1100 Electrodes in road are now online + the metal lid on EW-3 is painted w/ flex seal. Brett B. off site.

1200 All personnel off site. Troy + Andrew to go unlock MW-133 west.

1255 all personnel back onsite. Troy, Andrew, Brian over to look at OWS in extraction system. Very smelly + full of bacteria. Troy plans to collect sample at condenser effluent + his system next week to compare bacteria in each.

1315 Blowdown loop through LBAC successfully piped. water now routes to cooling tower before getting sent to BETS.

1500 Andrew Schamber off site



Location SE Rockford, IL Date Tues 11/15  
 Project / Client ERH RAO operations visit  
IEPA

~~1300~~ ~~Andrew~~

0940 Andrew Schamber (Author) onsite  
 Personnel Ted Highley (TRS)

Weather Sunny 48°F forecast sunny  
 mid to upper 50's

Plan Check in w/ TRS to see how  
 things are running & if everything  
 is still on schedule.

PPE Modified Level D

0945 Talked w/ Ted. Everything seems  
 to be running as it has been.  
 Still having issues w/ water & GETS  
 A 6,300 gallon poly tank is being  
 delivered to the site today & will  
 be stationed outside of the fence.  
 There will be a set of floats  
 so that they can blowdown water  
 to the GETS if needed. Water will  
 fill tank if GETS shuts down. Ted  
 working on drip system to potentially  
 get rid of some water. TRS thinking  
 of tapping up street electrodes to  
 try & hit it a little harder to see

Location SE Rockford, IL Date Tues 11/15  
 Project / Client ERH RAO operations visit  
IEPA

temps increase more than they  
 are now.

1015 Checked in w/ Brett Baker  
 (Bodine) over at extraction sys.  
 They are currently back flushing  
 the carbon & were on their way  
 to take an old motor to the  
 Shop to see if it could be  
 rebuilt. ERH system is running  
 but sending very little water  
 to GETS at the moment.

1050 Spoke w/ Ted per John Grabs  
 (CDM Smith) request about schedule  
 for confirmation sampling.  
 TRS is planning on starting  
 confirmation sampling week after  
 Thanksgiving. Could get pushed back  
 to week of 12/5 if it is going  
 to take longer than a few days.

1210 John Grabs (CDM Smith), Katie Cox  
 (CDM Smith), & Troy McFate  
 (Bodine) onsite. Chatted about  
 progress of system.

Location SE Rockford, IL Date Tues 11/15  
 Project / Client Area 4 ERH Operations Visit  
IEPA

- 1255 John Grabs & Katie Cox offsite  
 1303 Troy McFate offsite. Ted Highley  
 continuing to collect ops data.  
 1315 Andrew Schamber offsite

  
 11/15

Location SE Rockford, IL Date Tues 11/22  
 Project / Client Area 4 ERH Ops Visit

0940 Andrew Schamber (Author) onsite  
 Personnel Brad Morris (TRS), Amy  
 Wagner (TRS)

Weather cool, 37°F, cloudy, forecast  
 mid 40's cloudy

PPE Modified level D

Plan Check in w/ TRS to see  
 how system is running.

0945 Spoke w/ Brad. Evogua onsite  
 changing out carbon in  
 V6AC. Still waiting on analytical  
 data to come back from lab  
 so that spent carbon can  
 be taken offsite. TRS working  
 on winterizing equipment &  
 wrapping blowdown line with  
 reflective insulation. 6,000 gal  
 tank in place & hooked up to  
 condenser unit.

1030 Brett Baker (Bodine) & Troy  
 McFate (Bodine) onsite. Spoke w/  
 Brad about system. Bodine is  
 changing bag filters every 2  
 days now. TRS barely sending



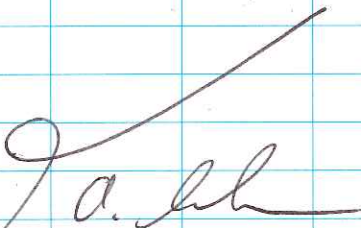
Location SE Rockford, IL Date Tues 11/22  
 Project / Client Area 4 ERH OPS visit  
IEPA

any water to BETS w/ no water in poly-tank.

1050 Bobbie offsite to collect pump readings in EX-1 + EX-3, as well as collect bacteria samples from vault from EX-3 + blowdown line.

1125 Chris Thomas + Tim Werner (TRS) onsite Spoke w/ Chris about confirmation sampling, looks like it'll be 4 days week of 12/5

1530 Andrew Schamber offsite.

  
 11/27

Location SE Rockford, IL Date Tues 11/29  
 Project / Client Area 4 ERH OPS visit  
IEPA

0930 Andrew Schamber (Author) onsite  
 Personnel Ted Highley (TRS)

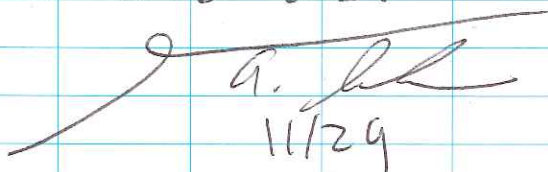
Weather Sunny 45°F forecast partly cloudy mid 50's

PPE Modified level D

Plan Check in w/ TRS about ERH system + plans for sampling week of 12/5

0940 Spoke w/ Ted Highley. Plans are still to sample next week. PID readings will be completed by tomorrow 11/30. I emphasized that we would need them right away so that we could do our own internal review. TRS is having issues w/ the 6,000 gal tank. Pump inside of tank pumping too much water to cooling tower. TRS waiting on parts to get that completed. Ted currently finishing winterization of system + collecting ops data.

- 1015 Troy McFate (Bodine) onsite. Talked about plans for Bodine's extraction system. Getting a lot of sand in EW-3. EW-3 is off until next week. EW-1 & EW-2 now pumping. Bacteria sample was also collected today from blowdown line inside of vault.
- 1117 Spoke w/ Ted. Apparently the sampling event next week may need to be split into 2 events because Terra Probe has only limited availability. Brad Morris is in contact w/ them now.
- 1315 Ted changed oil in blower motor & did general maintenance.
- 1330 Ted moved onto cooling fans on top of condenser unit. Checking belts on fans & general equipment.
- 1500 Andrew Schamber offsite

  
11/29

- 0930 Andrew Schamber onsite  
Personnel Brad Morris  
Weather cold, cloudy, 33°F, forecast 40°F, cloudy  
PPE Modified Level D  
Plan Check in w/ TRS about progress of ERH system
- 0950 Spoke w/ Brad. Sampling will occur tues 12/13 thru Friday 12/16. Terra Probe will be onsite at 1100 tues. morning. System is running as intended. TRS insulated the L6AL vessels. ~~EX-1~~ EX-1 is only running for BETS system. I put in a formal request for TRS to collect another round of PID readings (much to Brad's dismay). Should be collected this week. Brad <sup>As</sup> said that they would hit their energy quota possibly this weekend, if not right before sampling next week



Location SE Rockford, IL Date Tues 12/6  
 Project / Client Aren 4 ERH OPS visit  
IEPA

TPS getting ready to collect samples to ship out today around noon. Talked about sampling procedure for PID readings. Used Tedlar bags & filled w/ water then collected sample from there. They don't place a whole lot of trust in readings. John Grabs (COM Smith) stopped by site.

1150 Brad Morris off site to ship samples. Andrew Schamber off site to run errands & pick up supplies.

Location SE Rockford, IL Date Tues 12/13  
 Project / Client \_\_\_\_\_

0900 Andrew Schamber (Author) onsite. Ted Higley, Terra Probe & Chris Bond already onsite.  
Personnel Andrew Schamber (COM Smith), Chris Bond (COM Smith), Ted Higley (TPS), Brad Morris (TPS), Buck (Terra Probe)

Weather 15° F, cold, clear, Forecast 20° F clear

PPE Modified level D

Plan Start soil sampling inside of building starting w/ SS15

0930 Talked w/ TPS & Terra probe about accessing the building. Brought rig in back through garage door.

0945 John Grabs onsite. dropped off PID & trimble. Left to stop by Area 7 to check for Encores & a T-handle for sampling. Brad Morris onsite.

1035 Terra probe set up at SS15 & now are waiting for CDM Smith's sampling equipment before we get started.

1044 Health & safety tailgate  
1048 Chris Bond bump test PID  
96.6 ppm zero at 0.0 ppm

~~1045~~  
1050 Terra Probe set up at SS16.  
1055 Terra starts probing SS16 to 8' by 5'

PID (PPM)	Depth
2.7	8.5'
2.9	16'
3.2	24'
3.9	32'

1216 Terra probe finishes drilling SS16. TRS continues to sample 8', 16', 24', 32' intervals.

1225 Terra breaks for lunch. TRS still needs to collect 32' & sample.

1240 CDM breaks for lunch.

1315 Terra sets up at SS17.  
1317 terra breaks ground on SS17

PID (ppm)	Depth
0.7	8'
0.8	16'
0.1	24'
27.8	32' med. odor

1430 Terra finishes SS17.

1435 Terra sets up at SS18.

1445 Terra begins boring SS18  
Moved SS18 3' N of app. location

PID (ppm)	Depth
0.2	8'
0.4	16'
0.2	24'
0.1	32'

Sample

1550 Collected sample from 24'-24.5'

1554 Terra finishes SS18.

1600 Setting up at SS15.

1610 Terra Probe starts drilling SS15.

1611 Stops drilling SS15 will pick back up tomorrow

1730 CDM Smith off site



Location SE Rockford, IL Date wed 12/14  
 Project / Client Area 4 ERT confirmation sample  
IEPA

0700 Andrew Schamber (Author) onsite  
 Chris Bond (CDM Smith) + Brad Morris (TRS) already on site  
 Personnel Ted Highley (TRS), Doug (Terra), Aaron (Terra), Brad Morris (TRS), Chris Bond (CDM Smith), Andrew Schamber (CDM Smith)

Weather Cold, 13°F, cloudy forecast 17°F  
 Cloudy, chance of snow

Plan Start with SS15 then move to 2 borings in street then continue w/ borings in Zone 2

0745 Chris Bond bump tests PID.  
 0.0 ppm → 1013 ppm

0755 Terra starts Drilling SS15

	PID	Depth	
Not going to lab → 0730	0.0	8'	
0850	0.0	16'	
	65.8	24'	mod. odor
1000	119.8	32'	Strong odor

0940 Terra finishes Drilling SS15

0955 Sets up at GP-3

	PID	Depth	
1145		31-32'	
<del>1055</del>	47.3	32'	MS/MSD

Location \_\_\_\_\_ Date \_\_\_\_\_  
 Project / Client \_\_\_\_\_

1035 Terra finishes drilling GP-03  
 1045 Terra probe hand clears GP-02 to 5'. Terra issues hand clearing GP-02 to 5' by 5.  
 1200 Hand cleared to 5' by 5.  
 Continuing to drill to 37'  
 1235 Finished boring GP-02 to 37'  
 1243 All personnel offsite for lunch

	PID	Depth	
1350	0.0	36.5' 37'	Dup
1355		37'	
	PID	Depth	
	12.1	8'	
	4.8	16'	
1455	0.0	24'	CAH-GP14A-16204 SAH-GP14A-16204
1520	27.0	37'	SAH-GP14B-16204

1455 Terra finishes GP-14. Sets up at GP-13

	PID	Depth	
	44.4	8'	
	1.8	16'	
1600	1.7	24'	
1630	75.4	32'	S.O.
1610			Terra finishes GP-13.

Location \_\_\_\_\_ Date \_\_\_\_\_

Project / Client \_\_\_\_\_

1620 Terra Probe offsite for day.  
 1745 LDM Personnel offsite to Fodor

C. H.

12/14/16

Location SE Rockford, IL Date Thurs 12/15/29

Project / Client Area 4 ERH Confirmation Sump  
IEPA

0710 Andrew Schamber (Author)  
 onsite. Chris Bond (LDM  
 Smith) + TRS already here.  
Personnel Chris Bond (LDM Smith),  
 Andrew Schamber (LDM Smith),  
 Brad Morris (TRS), Ted  
 Higley (TRS), Doug (Terra),  
 Aaron (Terra)

Weather very cold, -3°F clear forecast  
 5°F, clear, still cold

PPE Modified Level D as borings  
Plan Finish Zone 2 electrodes  
 and move to Zone 3  
 borings. Finish LDM  
 sampling today.

0735 Terra probe onsite.

0840 Terra started drilling GP-11

	PID	Depth	
	1.0	8'	
	0.0	16'	
0935	0.1	24'	STAT + CLP
1000	AS 46.5	32'	STAT + CLP

0950 Terra finishes GP-11.



Location \_\_\_\_\_ Date \_\_\_\_\_

Project / Client \_\_\_\_\_

Time	Term	starts	drilling at	BP-12
		PID	Depth	
		0.0	8'	
		2.9	16'	
		0.0	24'	
1155		13.7	32'	MS/MSD Mod. odor

1140 Terra finishes drilling BP-12

1150 Terra offsite for lunch

1207 All personnel offsite.

1255 All personnel back onsite

1305 Terra sets up at BP-9

Time	Term	starts	drilling at	BP-9
		PID	Depth	
1405		57.7	32'	Strong odor

1340 Finished drilling BP-9

1350 Terra sets up at BP-7

Time	Term	starts	drilling at	BP-7
		PID	Depth	
		0.0	32'	

1425 Finished drilling BP-7 as BP-7

1500 Terra sets up at BP-08

Time	Term	starts	drilling at	BP-08
		PID	Depth	
1545		180.1	37'	Strong odor BP

1530 Terra finishes drilling BP-08

Location \_\_\_\_\_ Date \_\_\_\_\_

Project / Client \_\_\_\_\_

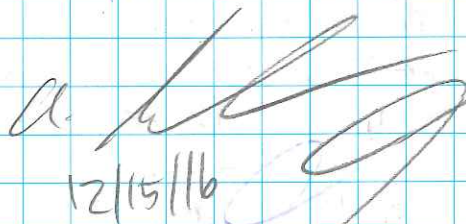
1540 Terra sets up at BP-01

Time	Term	starts	drilling at	BP-01
		PID	Depth	
1620		127.1	37'	

1605 Terra finishes drilling BP-01.  
Moved to BP-06 to start tomorrow

1615 Terra Probe offsite for day

1730 IDA Personnel offsite to FedEx.

Al.   
12/15/16

Location SE Rector, IL Date Fri. 12/16  
 Project / Client Area 4 ERT Confirmation Samp  
IEPA

0700 Andrew Schamber (Author) +  
 Chris Bond (CDM Smith)  
 onsite. TBS already here.

Personnel Same as Thurs 12/15/16

Weather Cold, 9°F forecast upper  
 10's cloudy.

PPE Modified Level D

Plan Finish up 4 borings and  
 leave!

0745 Terra Probe onsite.

0810 Chris B bumps PID Oppm →  
 99.9 ppm.

0815 Terra probe starts drilling at  
 GP-06.

PID	Depth
114.6	32'

0845 Terra finishes GP-06. Sets up  
 at GP-05

PID	Depth
69.6	32'

0923 Terra finisher drilling GP-05

0930 Terra probe sets up at GP-04

PID	Depth
5.8	32

Location

Date

Project / Client

1000 Terra finishes drilling GP-04

1030 Terra sets up at GP-10.

PID	Depth
5.8	32'

1120 CDM personnel offsite to  
 map MW-4A + 4B monitoring  
 wells at Area 11.

1320 Andrew Schamber offsite to  
 drop equipment off.

*[Signature]*



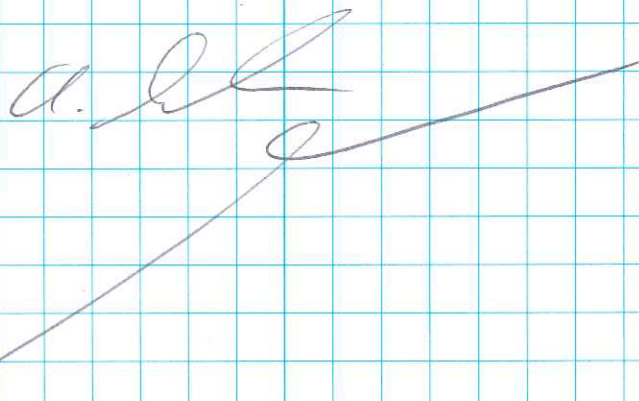
Location SE Rockford, IL Date 1/4/17Project / Client Aren 4 ERH Ops visit  
IEPA0920 Andrew Schamber (Author)  
onsite.Weather Cold, 19°F, clear forecast  
mid 20's, sunnyPersonnel Ted Highley (TRS)PPE Modified Level DPlan Check in w/ TRS about  
progress of ERH system +  
check about plan for sampling0930 Spoke w/ Ted H. bETS system  
is down, went down earlier  
this morning. No bodice crew  
over at treatment system.  
ERH system running fine. Electrodes  
have been turned off and only  
select electrodes remain on.Ted mentioned that sampling may  
occur around 1/16 instead of  
next week. Ted continuing to  
collect ops data, work on  
video ~~surveillance~~ surveillance system,  
and collect samples.

Location \_\_\_\_\_ Date \_\_\_\_\_

Project / Client \_\_\_\_\_

1000 Walked down to bETS to  
see if it was visibly operating.  
bETS appears to be operational.  
check w/ Ted + darms have  
cleared on TRS side as well.  
Both systems are operating.1015 Walked over to Area 4  
trailer. We have 11 Encore  
samplers + 1 "T" handle in  
trailer for confirmation sampling.1145 Ted collects water samples  
from L6AC + air sunna can  
samples.

1300 Andrew Schamber offsite



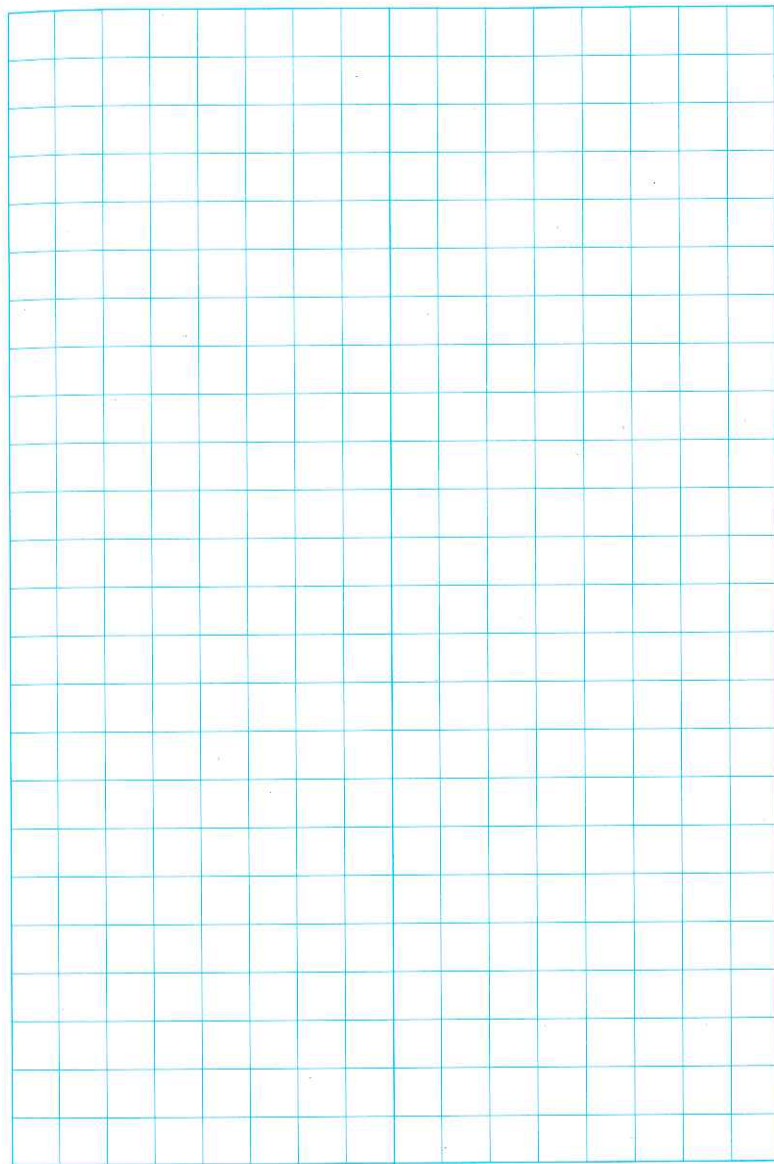
Location SE Rockford, IL Date 1/10/17Project / Client Area 4 ERH Ops visit  
IEPA

0850 Andrew Schamber (Author) onsite

Personnel John Grabs (KBY Smith),  
Brad Morris (TRS)Weather Raining, 38°F, forecast chance  
of rain, cloudy, mid 40'sPPE Modified level DPlan Check in with TRS about  
how ERH system is operating,  
get updated schedule for soil  
confirmation sampling + start  
time on 16<sup>th</sup>. Head over to  
Area 11 to dig for MW-4A +  
MW-4B.

Location \_\_\_\_\_ Date \_\_\_\_\_

Project / Client \_\_\_\_\_





Location SE Rockford, IL Date Mon 1/16/17  
 Project / Client 2nd Confirmation Sampling Area 4  
IEDA

0930 Andrea Schamber (Author) onsite.

Personnel Brad Morris (TRS)

Weather Ice & rain, 35°F, forecast  
 more rain upper 30's

PPE Modified level D

Plan Start second round of confirmation  
 sampling at Area 4. Drillers will  
 arrive around 1130 to drill at  
 7 locations

0945 checked in w/ Brad. Drillers will  
 be arriving a little late. Offsite  
 to trailer & grab ice & coolers.

1050 Back onsite & waiting for  
 drillers to show up.

1135 Terra Probe arrives onsite

1155 Terra sets up at GP-17

1202 Terra starts drilling GP-17, 32'

offset 1.5' NW

Depth  
 32'

PID  
 10.4

1230 Finished GP-17. Samples cooling on  
 ice

1240 Terra moves probe to set up at  
 GP-15

1244 Terra probe starts drilling to 32'  
 & offset 1' SW

Location \_\_\_\_\_

Date \_\_\_\_\_

Project / Client \_\_\_\_\_

at ~~GP-15~~ GP-15

Depth  
 32'

PID  
 10.1

1300 Not enough soil for both  
 STAT & CLP samples. Collected  
 sample for CLP and NOT  
 STAT. Called John Grabs to  
 confirm that we do not  
 need to set back up  
 and collect another sample

1320 Terra finishes drilling to 32'  
 at GP-15

1340 Terra sets up at GP-03.  
 Starts drilling to 32'  
 offset

Depth  
 32'

PID  
 60.4

1435 Terra finishes drilling GP-03

1450 Terra moves to GP-09.

1510 Terra starts drilling GP-09 to  
 32' bgs. Offset

Depth  
 32'

PID  
 38.1

Location \_\_\_\_\_ Date \_\_\_\_\_

Project / Client \_\_\_\_\_

1545 Terra finishes drilling BP-05  
Mobs to BP-06

1555 Terra Starts drilling BP-06 to  
32' bgs

Depth PID  
32'

1650 Terra probe finishes drilling  
BP-06. Packing up rig for  
day

1700 Terra probe offsite.

1705 Did not sample BP-06 due to  
poor recovery. Will redrill first  
thing tomorrow morning

1709 Andrew Schamber offsite to  
trailer to pack samples for  
shipping

1610 Off site to FedEx.

Location SE Rockford, IL Date Tues 11/17/17

Project / Client 2<sup>nd</sup> round Confirmation Sampling Area 4  
IEPA

0720 Andrew Schamber (Author) on site.  
TRS + Terra probe arrive at  
same time

Personnel Brad Morris (TRS), Ted Highley  
(TRS), Doug (Terra Probe)

Weather chilly, 34 w/ dense fog,  
forecast mid 30's cloudy

PPE Modified level D

Plan Continue drilling and finish  
sampling today. TRS + Terra  
probe will then install

5/4" ~~copper~~ copper pipes down  
5 borings increase samples  
come back above RB's. These  
pipes will be used to sponge  
the ground w/ air from a  
compressor. Pipes will be  
installed to 34 ft bgs. in BP-05, BP-06  
+ BP-03

0800 Terra begins drilling at new  
BP-06.

Depth PID  
32' 70.2

0835 Terra finishes drilling BP-06



Location \_\_\_\_\_ Date \_\_\_\_\_

Project / Client \_\_\_\_\_

0850 Terra starts drilling at  
 6P-08 to 37' bgs

Depth	PID
37'	67.6

0915 Columbia delivers 3/4" copper  
 pipe to site for TRS

0935 Terra probe finishes drilling  
 6P-08 TRS constructing a  
 copper pipe that will be set  
 at 43' in 6P-08

0943 Spoke with Brad. Copper pipes  
 will be installed to 43' bgs in  
 6P-08 + 6P-01 and to 39' bgs in  
 6P-06, 6P-09 + a new hole between  
 E3 + E4.

1045 Copper pipe set to 43' in 6P-08

1050 Terra probes sets up + starts  
 drilling 6P-01

Depth	PID
37'	60.8

1120 Terra finishes drilling 6P-01

1135 Doug offsite for lunch.

1220 Doug back onsite.

Location \_\_\_\_\_ Date \_\_\_\_\_

Project / Client \_\_\_\_\_

1235 Doug setting copper pipe in  
 6P-01 to 43' bgs.

1316 Moved ~~per~~ drill rig to new spot  
 between E3 + E4

1445 Andrew Schamber offsite to  
 drop equipment off at  
 U.S. Environmental

*A. Schamber*  
 1/17/17

Location SE Rockford, IL Date wed 11/18/17  
 Project / Client Area 4 2<sup>nd</sup> round confirmation Sampling  
IEPA

0820 Andrew Schamber (Author) onsite  
 Personnel Brad Morris (TRS), Ted Highley (TRS)  
 Doug (Terra)

Weather 34°F, cloudy, misty, forecast  
 mid 30's, cloudy

PPE Modified level D

Plan Check in w/ TRS about drilling  
 progress.

0900 Terra probe moving rig to trailer  
 + ~~back in~~ packing things up.

0910 TRS turns system back on w/ 6 electrodes  
 operating: 63, 64, 65, H4, H5, H6.

0936 TRS removes RTD's ~~pro~~ from TMP-K4  
 and places them in copper pipe in  
 6P-01. This way they can monitor  
 temperatures in area where electrodes  
 are operating

0955 UPS delivers box for TRS

1015 Andrew Schamber offsite to Area 4  
 trailer.

1215 Andrew offsite + head back to  
 Chicago

*all*

Location SE Rockford, IL Date Tues 11/24/17  
 Project / Client Area 4 ERH OPS visit  
IEPA

0930 Andrew Schamber (Author)  
 onsite

Personnel Brad Morris (TRS), Ted  
 Highley (TRS)

Weather Cloudy 39°F, forecast calls  
 for cloudy skies low 40's

PPE Modified level D

Plan Check in w/ TRS to see  
 progress of Air addition  
 system + ERH progress.

0945 Air compressor delivered to  
 the site. Atlas 6X4 FF5-  
 Hp

1010 TRS working on reprogramming  
 the video cameras across the  
 site.

1215 Spoke w/ Brad Air system should  
 be operational later today depending  
 on a McMaster delivery. Got  
 go ahead on spent carbon pickup  
 to go to landfill. TRS working  
 on scheduling a pick up for  
 potentially next week. Somebody  
 broke into one of the rooms at



Location \_\_\_\_\_ Date \_\_\_\_\_

Project / Client \_\_\_\_\_

some point this past weekend, took a lot of copper wiring that was already here. No TRS gear was stolen. Cameras were placed facing that way in case they try to come back.

1350 UPS delivers a package to the site.

1400 TRS Begins to connect copper fittings to AASI points. A copper 90° fitting is attached to copper pipe in ground. Another 90° fitting is then attached. A flow meter is then connected with a barb for the air hose to connect to. Each air line is then connected to a solenoid which is then connected to a timer. Black iron pipe then runs from timer, to air compressor inside of building.

~~1500~~ 1600 Air System is operating & Andrew Schamber offsite.

Location \_\_\_\_\_

Project / Client Area 4 ERT OPS visit

IEPA

0915 Andrew Schamber (Author) onsite.

Personnel Brad Morris (TRS), Ted Highley (TRS)

Weather light rain, 39°F, forecast cloudy/rain low 40's

PPE Modified Level D

Plan Check in w/ TRS about ERT/AASI system that began operating at approximately 1600 yesterday.

0935 Speak w/ Brad & Ted. Everything is running as it should. AASI points (SS1, SS6, SS9) cycling and running just under 10 SLFM.

1000 TRS personnel have to run to another site in Des Plaines to fix a fence. Should be back later this afternoon.

1010 Andrew Schamber offsite to Area 4 trailer.

1340 Back at Area 4. TRS not back yet.

1401 Andrew Schamber offsite.

A. Sch

0915 Andrew Schamber (Author) onsite.

Personal Ted Highley (TRS)

Weather cloudy 37°F forecast upper 30's cloudy

PPE Modified level D

Plan check in w/ TRS about progress of ERH system + AAST system.

0930 checked in w/ Ted. There was another break in over the weekend. Able to catch them on camera but nothing w/ identifying characteristics. Ted moving video camera further into the building to hopefully catch them if they came back. Thieves entered through window, by breaking it, on the north end of the building near existing garage door.



1000 Window Repair on site to repair broken window.

1100 Andrew Schamber offsite to Area 4 trailer

1430 Andrew Schamber offsite for day.

C. [Signature]

## IEPA

0845 Andrew Schamber (Author) onsite. TRS + truck already onsite.

Personnel Ted Highley (TRS) onsite

Weather 34°F, partly cloudy forecast mid 30's + dropping, partly cloudy

PPE Modified Level D

Plan have 12 and 14 bag of spent carbon hauled offsite.

0945 Ted w/ use of forklift loads the spent carbon bags onto truck, each row of 2 bags are strapped down. Andrew Schamber signs on behalf of Illinois EPA for Bill of Lading. Trucking company gets one copy + TRS got other copy. TRS will email signed Bill of Lading to CDM Smith.

1015 Andrew Schamber offsite to Area 4 trailer.

Location SE Rockford, IL Date Tues 2/17/17Project / Client Area 4 ERH Ops visit  
IEPA0915 Andrew Schamber (Author) on-site  
Personnel Brad Morris (TRS)Weather rain + fog, 39°F forecast cloudy  
skies + change of rain, mid 40'sPPE Modified Level DPlan Check in w/ TRS about progress  
of AASI system + ERH system0930 Spoke w/ Brad Morris 3<sup>rd</sup> round  
of confirmation sampling will  
occur on 2/16/17. 3 samples  
will be collected fromBP-01, BP-06, BP-09. Everything  
else running just fine. Bodine  
will be at GETS flushing  
carbon today + tomorrow so  
the GETS will not be operating  
during that time. TRS saw  
spikes of PCE in influent air  
samples so AASI system  
appears to be working. Brad  
collected influent air sample just  
before I arrived + was prepping  
bottles for gas samples as we  
talked.

Location \_\_\_\_\_

Date \_\_\_\_\_

Project / Client \_\_\_\_\_

1045 Spoke w/ John Grabs  
about sampling schedule  
and Area 7 building stuff  
1100 Andrew Schamber off site to  
Area 4 trailer



Location SE Rockford, IL Date Thurs 2/14/7  
 Project / Client 3<sup>rd</sup> round confirmation Samp.  
IERA

0930 Andrea Schamber (Author) onsite  
 after picking up PID from  
 US Environmental

Personal No one onsite yet.

Weather Cloudy 39°F, forecast mid 40's  
 cloudy

PPE Modified level D

Plan Confirmation sampling at  
 GP-01, GP-06, GP-09

1030 John grabs onsite at Area 4  
 trailer. Brad Morris onsite  
 at Area 4. Spoke w/ Brad  
 about making sure we had  
 enough recovery for soil + if  
 not we would need to push  
 another hole

1120 Doug w/ Terra probe onsite

1150 Terra sets up at GP-06

1200 Terra starts drilling GP-06  
 to 32' bgs

Depth	PID
32'	11.0

1230 Finished drilling GP-06. Terra  
 probe setting up at GP-01

Location

Date

Project / Client

1245 Terra starts drilling GP-01  
 to 37' bgs

Depth	PID
37'	35.4

1320 Finished drilling GP-01.  
 Mobs to GP-09

1335 Terra starts drilling GP-09  
 to 32' bgs

Depth	PID
32'	27.6

1400 Terra finishes drilling GP-09

1420 Terra probe offsite

1450 Andrea Schamber offsite  
 to Area 4 trailer

## Soil Lithologies and PID Readings



S.E. ROCKFORD AREA 4  
LITHOLOGY AND ORGANIC VAPOR READINGS OF SOIL SAMPLES FROM BORINGS

DEPTH (ft bls)	BORINGS IN ZONE 3 (West of Property Line)												BORINGS IN ZONE 3 (On Subject Property)																	
	"B" BORINGS				"C" BORINGS				"D" BORINGS			"E" BORINGS			"F" BORINGS				"G" BORINGS				"H" BORINGS							
	GWP-B4	MPE-B4	MPE-B3	MPE-B2	MPE-C4	GWP-C3	MPE-C3	MPE-C2	MPE-D5	MPE-D4	MPE-D3	MPE-E5	MPE-E4	MPE-E3	MPE-F5	MPE-F4	MPE-F3	GWP-F3	MPE-G5	MPE-G4	MPE-G3	MPE-G2	GWP-H6	MPE-H6	GWP-G5	MPE-H5	MPE-H4	MPE-H3	MPE-H2	
0.5	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	0.0	0.1	0.4	0.1	0.0	18.8	0.0	0.3	0.2	2.9	0.1	0.1	0.9	0.2	NM	39	45.0	3.5	
1	<0.3	0.0	0.0	0.0	0.0	<0.3	0.0	0.0	0.0	0.3	0.0	0.4	0.6	0.4	0.0	0.0	18.8	0.0	0.1	0.3	2.9	0.3	0.1	0.2	0.5	NM	62	48.3	3.5	
1.5	<0.3	0.0	0.0	0.0	0.0	<0.3	0.0	0.0	0.0	0.3	0.0	0.4	0.8	0.3	0.0	0.3	9.5	0.0	0.1	0.1	2.9	0.3	0.1	0.2	0.5	NM	85	51.5	3.5	
2	<0.3	0.0	0.0	0.0	0.0	<0.3	0.0	0.0	0.0	0.0	0.1	0.1	0.8	0.3	0.2	0.3	9.5	0.0	0.1	0.1	4.8	0.3	0.1	0.2	0.5	NM	108	54.8	3.5	
2.5	<0.3	0.0	0.0	0.0	0.0	<0.3	0.0	0.0	0.0	0.0	0.3	0.0	0.3	0.1	0.2	0.1	9.5	0.0	0.1	0.1	4.8	0.1	0.1	0.0	0.5	NM	51	58.0	3.5	
3	<0.3	0.0	0.0	2.0	0.0	<0.3	0.0	0.0	0.0	0.0	0.1	0.0	0.3	0.3	0.1	0.0	4.1	0.0	0.0	0.1	1.9	0.0	0.1	0.0	0.1	NM	41	32.0	3.5	
3.5	<0.3	0.0	0.0	2.1	0.0	<0.3	0.0	0.2	0.0	0.3	0.0	0.0	0.1	0.1	0.1	0.2	4.1	0.0	0.0	0.1	1.9	0.4	0.3	0.0	0.2	NM	35	26.0	3.5	
4	<0.3	0.0	0.0	2.3	0.0	<0.3	0.0	0.3	0.1	0.3	0.0	0.0	0.1	0.4	0.5	0.2	3.5	0.0	0.0	0.1	2.5	0.4	0.3	0.0	0.2	NM	28	20.0	1.1	
4.5	<0.3	0.0	0.0	2.4	0.0	<0.3	0.0	0.5	0.1	0.3	0.0	0.0	0.1	0.4	0.5	0.2	4.7	0.0	0.0	0.0	2.5	0.3	0.3	0.0	0.2	NM	21	27.6	1.0	
5	<0.3	0.0	0.0	2.5	0.0	<0.3	0.0	0.6	0.1	0.3	0.0	0.0	0.1	0.4	0.5	0.2	4.4	0.0	0.0	0.0	2.5	0.3	0.3	0.0	0.2	NM	10.5	27.6	1.0	
5.5	<0.3	0.0	0.0	2.7	0.1	<0.3	0.0	0.8	0.1	0.3	0.0	0.0	0.1	0.1	0.5	0.2	4.2	0.0	0.1	0.5	2.5	0.1	0.3	0.0	0.2	NM	9.3	27.6	0.9	
6	<0.3	0.0	0.0	2.8	0.1	<0.3	0.0	1.0	0.1	0.3	0.0	0.0	0.1	0.1	0.5	0.2	3.9	0.0	0.1	0.5	2.5	0.1	0.3	0.0	0.2	NM	8.0	27.6	0.8	
6.5	<0.3	0.0	0.0	2.9	0.2	<0.3	0.0	1.1	0.1	0.0	0.1	0.0	0.1	0.1	13.5	0.2	3.6	0.0	0.2	0.3	3.0	1.5	0.1	0.0	0.6	NM	7.6	27.6	0.8	
7	<0.3	0.0	0.0	3.1	0.2	<0.3	0.0	1.3	0.1	0.0	0.1	0.0	0.1	0.1	9.5	0.2	3.3	0.0	0.2	0.3	2.9	1.4	0.1	0.1	0.6	NM	7.6	27.6	0.7	
7.5	<0.3	0.0	0.0	3.2	0.3	<0.3	0.0	1.4	0.1	0.0	0.1	0.0	0.1	0.1	5.4	0.1	3.1	0.0	0.2	0.3	2.9	1.3	0.1	0.1	0.6	NM	7.6	6.7	0.7	
8	<0.3	0.0	0.0	3.3	0.3	<0.3	0.4	1.6	0.1	0.0	0.1	0.0	0.1	0.1	1.4	0.1	2.8	0.0	0.3	0.3	2.8	1.2	0.1	0.1	0.6	NM	7.6	6.5	0.6	
8.5	<0.3	0.0	0.0	3.5	0.2	<0.3	0.4	1.8	0.0	0.0	0.2	0.5	0.1	1.0	0.4	0.1	2.5	0.0	0.3	0.5	2.7	1.1	0.1	0.1	0.6	NM	7.6	6.4	0.5	
9	<0.3	0.0	0.0	3.6	0.2	<0.3	0.4	1.9	0.0	0.0	0.2	0.5	0.1	1.0	0.4	0.1	2.2	0.0	0.3	0.5	2.7	1.0	0.1	0.1	0.6	NM	7.6	6.2	0.5	
9.5	<0.3	0.0	0.0	3.7	0.2	<0.3	0.4	2.1	0.0	0.0	0.2	0.4	0.1	0.9	0.4	0.1	2.0	0.1	0.3	0.5	2.6	0.9	0.2	0.2	0.6	NM	3.4	6.1	0.4	
10	<0.3	0.0	0.0	3.8	0.2	<0.3	0.4	2.2	0.0	0.0	0.2	0.4	0.1	0.9	0.4	0.1	1.7	0.1	0.4	0.5	2.5	0.8	0.2	0.2	0.6	NM	3.4	5.9	0.3	
10.5	<0.3	0.0	0.0	4.0	0.2	<0.3	0.3	2.4	0.0	0.0	0.2	0.4	0.1	0.9	0.4	0.1	1.4	0.1	0.4	0.5	2.5	0.7	0.3	0.2	0.6	NM	3.4	5.7	0.3	
11	<0.3	0.0	0.0	4.1	0.2	<0.3	0.3	2.5	0.0	0.0	0.2	0.3	0.1	0.8	0.5	0.1	1.1	0.1	0.4	0.5	2.4	0.6	0.3	0.2	0.6	NM	3.4	5.6	0.2	
11.5	<0.3	0.0	0.0	4.2	0.2	<0.3	0.3	2.7	0.0	0.0	0.2	0.3	0.1	0.8	0.5	0.1	0.9	0.1	0.5	0.5	2.3	0.5	0.1	0.2	0.6	NM	3.4	5.4	0.2	
12	<0.3	0.0	0.0	4.4	0.2	<0.3	0.3	2.9	0.0	0.0	0.2	0.2	0.1	0.8	0.5	0.1	0.6	0.1	0.5	0.5	2.3	0.4	0.1	0.2	0.6	NM	3.4	5.2	0.3	
12.5	<0.3	0.0	0.0	4.5	0.2	<0.3	0.3	3.0	0.0	0.0	0.3	0.2	0.1	0.7	0.5	0.1	0.4	0.1	0.0	0.6	2.2	0.3	0.1	0.3	0.6	NM	1.5	5.1	0.3	
13	<0.3	0.0	0.0	4.6	0.3	<0.3	0.3	3.2	0.0	0.0	0.3	0.2	0.1	0.7	0.5	0.1	0.4	0.1	0.1	0.6	2.2	0.3	0.1	0.3	0.6	NM	1.5	4.9	0.4	
13.5	<0.3	0.1	0.1	4.8	0.3	<0.3	0.3	3.3	0.0	0.1	0.3	0.1	0.1	0.7	0.5	0.1	0.4	0.1	0.2	0.6	2.1	0.3	0.1	0.3	0.6	NM	1.4	4.8	0.4	
14	<0.3	0.1	0.1	4.9	0.3	<0.3	0.3	3.5	0.0	0.1	0.3	0.1	0.1	0.7	0.5	0.1	0.4	0.1	0.3	0.6	2.0	0.3	0.1	0.3	0.6	NM	1.4	4.6	0.5	
14.5	<0.3	0.1	0.1	5.0	0.3	<0.3	0.2	3.7	0.0	0.2	0.3	0.3	0.1	0.6	0.5	0.1	0.4	0.1	0.4	0.6	2.0	0.3	0.1	0.3	0.6	NM	1.3	4.4	0.6	
15	<0.3	0.2	0.2	5.2	0.3	<0.3	0.2	3.8	0.1	0.2	0.4	0.3	0.1	0.6	0.5	0.1	0.4	0.1	0.6	0.7	1.9	0.3	0.1	0.4	0.6	NM	1.3	4.3	0.6	
15.5	<0.3	0.2	0.2	5.3	0.3	<0.3	0.2	4.0	0.1	0.3	0.6	0.3	0.1	0.6	0.5	0.1	0.4	0.1	0.7	0.7	1.8	0.3	0.1	0.4	0.6	NM	1.3	4.1	0.7	
16	<0.3	0.2	0.2	5.4	0.3	<0.3	0.2	4.1	0.1	0.3	0.7	0.3	0.1	0.5	0.6	0.1	0.4	0.1	0.8	0.7	1.8	0.3	0.1	0.4	0.6	NM	1.2	4.0	0.8	
16.5	<0.3	0.2	0.2	5.6	0.3	<0.3	0.2	4.3	0.1	0.4	0.9	0.3	0.1	0.5	0.6	0.1	0.4	0.1	0.9	0.7	1.7	0.4	0.1	0.7	0.6	NM	1.2	3.8	0.8	
17	<0.3	0.3	0.3	5.7	0.3	<0.3	0.2	4.5	0.1	0.4	1.0	0.3	0.1	0.5	0.6	0.1	0.4	0.1	1.0	0.7	1.6	0.4	0.1	0.8	0.6	NM	1.2	3.6	0.9	
17.5	<0.3	0.3	0.3	5.8	0.3	<0.3	0.2	4.6	0.1	0.5	1.2	0.3	0.1	0.4	0.6	0.1	0.4	0.1	1.1	0.7	1.6	0.4	0.1	0.9	0.6	NM	1.1	3.5	0.9	
18	<0.3	0.3	0.3	6.0	0.3	<0.3	0.2	4.8	0.1	0.5	1.3	0.3	0.1	0.4	0.6	0.1	0.4	0.1	1.2	0.7	1.5	0.4	0.1	1.0	0.6	NM	1.1	3.3	1.0	
18.5	<0.3	0.1	0.1	6.1	0.3	<0.3	0.1	4.9	0.4	0.5	1.5	0.3	0.3	0.7	0.3	0.1	0.4	0.4	1.3	0.7	0.1	0.4	0.1	1.2	0.6	NM	1.0	3.1	1.1	
19																														

S.E. ROCKFORD AREA 4  
LITHOLOGY AND ORGANIC VAPOR READINGS OF SOIL SAMPLES FROM BORINGS

DEPTH (ft bls)	BORINGS IN ZONE 3 (West of Property Line)												BORINGS IN ZONE 3 (On Subject Property)																			
	"B" BORINGS				"C" BORINGS				"D" BORINGS				"E" BORINGS				"F" BORINGS				"G" BORINGS				"H" BORINGS							
	GWP-B4	MPE-B4	MPE-B3	MPE-B2	MPE-C4	GWP-C3	MPE-C3	MPE-C2	MPE-D5	MPE-D4	MPE-D3	MPE-E5	MPE-E4	MPE-E3	MPE-F5	MPE-F4	MPE-F3	GWP-F3	MPE-G5	MPE-G4	MPE-G3	MPE-G2	GWP-H6	MPE-H6	GWP-G5	MPE-H5	MPE-H4	MPE-H3	MPE-H2			
26.5	<0.3	0.1	0.1	0.1	0.1	<0.3	0.4	3.1	2.3	0.8	3.9	3.1	1.1	0.4	8.7	0.2	0.5	0.2	10.7	0.9	2.9	0.5	0.5	3.0	1.6	NM	0.4	0.6	7.8			
27	<0.3	0.1	0.1	0.1	0.1	<0.3	0.4	3.7	3.3	0.8	4.0	3.6	1.2	2.4	12.1	0.2	0.6	0.3	12.7	0.9	3.8	0.5	0.5	3.1	1.9	NM	0.4	0.4	7.0			
27.5	<0.3	0.1	0.1	0.1	0.2	<0.3	0.4	4.2	4.2	0.8	4.2	4.0	1.4	4.3	15.5	0.2	0.6	0.3	14.6	28.9	4.7	0.4	0.6	4.8	2.2	NM	28.1	21	6.2			
28	<0.3	0.1	0.1	0.1	0.2	<0.3	0.4	4.8	5.1	0.8	4.3	4.4	1.5	6.3	18.9	0.2	0.7	0.3	16.5	32.0	5.6	0.4	0.7	8.1	2.6	NM	28.9	23	5.4			
28.5	<0.3	0.1	0.1	0.1	0.2	<0.3	0.5	5.3	6.0	8.7	18.7	4.9	1.7	8.3	89	0.2	0.7	0.3	18.4	35.1	6.4	0.3	0.7	11.4	2.9	NM	29.8	25	4.5			
29	<0.3	0.1	0.1	0.1	0.2	<0.3	0.5	5.9	7.0	24	24	5.3	1.8	10.2	94	0.2	0.8	0.3	20.3	38.3	7.3	0.3	0.8	14.7	3.2	NM	30.6	27	3.7			
29.5	<0.3	0.1	0.1	0.2	0.2	<0.3	0.5	6.4	7.9	39	29	143	2.0	12.2	99	0.2	0.9	0.3	22.2	41.4	8.2	0.3	0.8	18.1	3.5	NM	31.5	29	2.9			
30	<0.3	0.2	0.2	0.2	0.2	<0.3	0.5	7.0	8.8	55	34	160	2.1	14.1	104	0.2	0.9	0.3	24.2	44.5	9.1	0.3	0.9	21.4	3.9	NM	32.3	31	2.1			
30.5	<0.3	0.2	0.2	0.2	0.3	<0.3	0.5	110	9.7	70	40	177	49.8	16.1	109	0.4	1.0	0.3	26.1	47.6	9.9	0.2	0.9	24.7	4.2	NM	33.1	34	1.2			
31	<0.3	0.2	0.2	0.2	0.3	<0.3	0.6	119	10.7	85	45	194	85	18.1	113	4.8	1.0	0.4	28.0	50.8	10.8	0.2	0.9	28.0	4.5	NM	34.0	36	0.4			
31.5	<0.3	0.2	0.2	0.2	0.3	<0.3	0.6	128	11.6	101	47	211	120	20.0	118	9.1	1.1	0.4	43	53.9	38	0.2	1.0	39	302	NM	34.8	38	3.1			
32	<0.3	0.2	0.2	0.2	0.3	<0.3	0.6	137	12.5	116	54	227	155	22.0	123	14	1.1	0.4	55	57.0	41	0.2	1.0	41	298	NM	35.6	40	3.2			
32.5	<0.3	0.2	0.2	0.2	0.3	<0.3	8.7	145	13.4	131	61	244	246	48	128	18	1.2	0.4	67	141	44	0.1	1.1	43	293	NM	36.5	42	3.3			
33	<0.3	0.2	0.2	0.2	0.3	<0.3	21.7	154	14.4	146	68	261	259	54	133	22	1.2	0.4	80	144	47	0.1	1.1	46	289	NM	37.3	44	3.4			
33.5	<0.3	0.2	0.2	0.2	0.4	<0.3	34.8	163	15.3	162	76	278	273	60	249	27	33	9.4	92	147	49	0.0	53.2	48	285	NM	38.2	64	3.5			
34	<0.3	0.2	0.2	0.2	0.4	<0.3	47.8	172	16.2	177	83	295	286	66	243	31	38	13.3	104	151	52	0.1	66.0	50	281	NM	39.0	67	3.6			
34.5	<0.3	0.2	0.2	0.2	0.4	<0.3	70.9	181	20.1	183	90	324	299	71	237	55	44	17.1	116	154	55	0.2	78.7	52	276	NM	44.0	71	3.7			
35	<0.3	0.2	0.2	0.2	0.4	<0.3	70.9	190	25.5	185	97	316	313	77	231	60	49	21	128	157	58	0.2	91.5	55	272	NM	50.6	74	3.8			
35.5	<0.3	0.2	0.2	0.2	0.1	<0.3	70.9	198	30.9	186	120	308	326	83	226	65	125	48	141	160	72	0.3	104	57	268	NM	57.2	77	3.9			
36	<0.3	0.2	0.2	0.2	0.1	<0.3	70.9	207	36.4	188	137	300	339	89	220	71	122	51	153	164	71	0.4	117	59	264	NM	63.8	81	3.9			
36.5	<0.3	0.2	0.2	0.3	0.1	<0.3	70.9	216	41.8	189	155	292	353	178	214	76	119	55	165	167	70	0.0	130	86	259	NM	70.4	84	4.0			
37	<0.3	0.3	0.3	0.3	0.2	<0.3	70.9	225	47.2	191	172	284	366	196	208	81	117	58	177	170	69	0.1	142	108	255	NM	77.0	87	4.1			
37.5	<0.3	0.3	0.3	0.3	0.2	<0.3	198	234	118	172	189	258	398	215	141	153	114	61	189	173	69	0.2	155	130	218	NM	156	91	4.2			
38	<0.3	0.3	0.3	0.3	0.2	<0.3	199	243	167	215	206	258	401	233	152	104	111	65	201	176	68	0.3	168	152	214	NM	134	94	4.3			
38.5	<0.3	0.3	0.3	0.3	0.2	<0.3	200	251	87	257	224	258	405	332	164	189	245	68	214	180	67	0.5	186	174	210	NM	111	70	4.4			
39	<0.3	0.3	0.3	0.3	0.3	<0.3	200	260	202	300	241	258	408	306	175	205	208	72	226	183	66	0.3	202	196	206	NM	89	47	4.5			
39.5	<0.3	0.3	0.3	0.3	0.3	<0.3	201	269	125	342	258	258	411	281	186	222	171	75	238	186	65	0.2	218	218	201	NM	66.7	23	4.6			
40	<0.3	0.3	0.3	0.3	0.3	<0.3	202	278	TD = 39.5	TD = 39.5	TD = 39.5	TD = 39.5	TD = 39.5	255	TD = 39.5	238	134	78	TD = 39.5	TD = 39.5	TD = 39.5	0.0	233	TD = 39.5	197	TD = 39.5	TD = 39.5	TD = 39.5	TD = 39.5			
40.5	<0.3	TD = 40	TD = 40	TD = 40	TD = 40	<0.3	TD = 40	TD = 40						TD = 40		TD = 40	TD = 40	82				TD = 40	249		193							
41	<0.3					<0.3												85					265		189							
41.5	<0.3					<0.3												119					226		185							
42	<0.3					<0.3												117					214		181							
42.5	<0.3					<0.3												115					203		177							
43	<0.3					<0.3												113					191		173							
43.5	<0.3					<0.3												110					180		168							
44	<0.3					<0.3												108					168		164							
44.5	<0.3					<0.3												106					157		160							
45	<0.3					<0.3												104					145		156							
45.5	<0.3					<0.3												87					134		210							
46	<0.3					<0.3												82					122		184							
46.5	<0.3					<0.3												78					111		159							
47	<0.3					<0.3												73					99		133							
47.5	TD = 47					TD = 47											TD = 47					88		TD = 47								
48																							76									
48.5																							TD = 48									
49																																
49.5																																
50																																

NOTES:  
### Values in red italicized font are mathematically calculated interpolations between the OVA readings obtained for the interval  
Asphalt at least 4" thick  
Sand  
Gravelly Sand  
Limerock Gravel  
Silty Sand  
Clayey Sand or Clayey Gravel  
NM Not Measured  
ft bls Feet Below Land Surface  
TD Total Depth (in ft bls)



S.E. ROCKFORD AREA 4  
LITHOLOGY AND ORGANIC VAPOR READINGS OF SOIL SAMPLES FROM BORINGS

DEPTH (ft bls)	BORINGS IN ZONE 2										BORINGS IN ZONE 1									
	"J" BORINGS				"K" BORINGS						"L" BORINGS				"M" BORINGS					
	MPE-J6	MPE-J5	MPE-J4	MPE-J3	MPE-K7	MPE-K6	MPE-K5	MPE-K4	MPE-K3	VP-L7	MPE-L7	MPE-L6	MPE-L5	MPE-L4	GWP-L4	MPE-M6	VP-M6	MPE-M5		
0.5	NM	0.0	0.0	13.1	0.0	0.0	0.0	0.0	0.0	0.0	2.2	0.1	0.0	NM	NM	13.1	2.2	0.0		
1	NM	0.0	0.0	28.7	0.0	0.0	20.2	14.5	0.8	0.0	2.2	0.1	0.0	NM	NM	13.1	2.2	0.0		
1.5	NM	1.2	0.0	44.0	0.0	0.0	20.2	14.5	0.8	0.0	2.2	0.1	0.0	NM	NM	13.1	2.2	0.0		
2	NM	2.3	0.0	44.0	0.0	0.0	20.2	14.5	0.8	0.0	2.2	0.1	0.0	NM	NM	13.1	2.2	0.0		
2.5	NM	3.5	0.0	44.0	0.0	0.0	20.2	14.5	0.8	0.0	2.2	0.1	0.0	NM	NM	13.1	3.8	0.0		
3	NM	4.6	0.0	44.0	0.0	0.0	20.2	14.5	0.8	0.0	2.2	0.1	0.0	NM	NM	13.1	3.8	0.0		
3.5	NM	5.8	0.0	6.8	0.0	0.0	20.2	14.5	48	0.0	2.2	0.1	0.0	NM	NM	13.1	3.8	0.0		
4	NM	6.9	0.0	7.5	0.0	0.0	20.2	14.5	62	0.0	2.2	0.1	0.0	NM	NM	13.1	3.8	0.0		
4.5	NM	8.1	0.0	8.1	0.0	0.0	0.7	14.5	76	0.0	2.2	0.1	0.0	NM	NM	13.1	5.8	0.0		
5	NM	75	34.1	8.8	0.0	0.0	0.7	14.5	90	0.0	2.2	0.1	0.0	NM	NM	13.1	5.8	0.0		
5.5	NM	80	52.7	9.4	0.0	0.0	0.7	14.5	7.5	0.0	0.4	0.1	0.0	NM	NM	NM	5.8	0.0		
6	NM	85	71.3	10.1	0.0	0.0	0.7	14.5	7.5	0.0	0.4	0.1	0.0	NM	NM	NM	5.8	0.0		
6.5	NM	90	43.7	7.4	0.2	0.1	0.1	49.5	7.5	0.0	0.4	0.1	0.0	NM	NM	NM	5.8	0.0		
7	NM	94	43.7	7.0	0.2	0.1	0.1	49.5	7.5	0.0	0.4	0.1	0.0	NM	NM	NM	5.8	0.0		
7.5	NM	99	43.7	6.7	0.2	0.1	0.1	49.5	2.9	0.0	0.4	0.1	0.0	NM	NM	NM	6.6	0.0		
8	NM	104	43.7	6.3	0.2	0.2	0.1	49.5	2.9	0.0	0.4	0.1	0.0	NM	NM	NM	6.6	0.0		
8.5	NM	226	53	6.0	0.2	0.2	0.1	68	2.9	0.0	0.1	0.1	1.2	NM	NM	0.2	6.6	0.0		
9	NM	226	59	5.6	0.2	0.2	0.1	62	2.9	0.0	0.1	0.1	1.2	NM	NM	0.2	6.6	0.0		
9.5	NM	314	66	4.5	0.1	0.2	68.8	57	2.9	0.0	0.1	6.8	1.2	NM	NM	0.2	6.6	0.0		
10	NM	314	72	4.3	0.1	0.3	75	51	2.9	0.0	0.1	6.8	1.2	NM	NM	0.2	6.6	0.0		
10.5	NM	314	79	4.1	0.1	0.3	81	45	16.4	0.0	0.1	6.8	1.2	NM	NM	0.2	3.1	0.0		
11	NM	314	85	3.9	0.1	0.3	86	39	16.4	0.0	0.1	6.8	1.2	NM	NM	0.3	3.1	0.0		
11.5	NM	298	92	3.7	0.1	4.1	92	34	13.3	0.0	0.1	6.8	7.8	NM	NM	0.3	3.1	0.0		
12	NM	295	98	3.5	0.1	12	98	28	12.9	0.0	0.1	6.8	7.8	NM	NM	0.3	3.1	0.0		
12.5	NM	291	210	3.3	1.5	21	104	31	12.6	0.0	0.1	6.8	7.8	NM	NM	0.3	3.1	0.0		
13	NM	288	214	3.0	1.5	29	110	34	12.2	0.0	0.1	6.8	7.8	NM	NM	0.3	3.1	0.0		
13.5	NM	285	218	2.8	1.5	37	85	37	11.9	0.0	0.1	6.8	7.8	NM	NM	0.3	3.1	0.0		
14	NM	282	223	2.6	1.6	45	86	39	11.5	0.0	0.1	6.8	7.8	NM	NM	0.3	3.1	0.0		
14.5	NM	278	227	2.4	1.6	54	88	42	11.2	0.0	0.0	6.8	7.8	NM	NM	0.3	3.1	0.0		
15	NM	275	231	2.2	1.6	62	89	45	10.8	0.0	0.0	6.8	7.8	NM	NM	0.4	3.1	0.0		
15.5	NM	272	235	2.0	1.6	73	91	48	10.5	0.0	0.0	21.3	7.8	NM	NM	0.4	3.1	0.0		
16	NM	269	239	1.8	1.6	75	92	50	10.1	0.0	0.0	24.0	7.8	NM	NM	0.4	3.1	0.0		
16.5	NM	265	243	1.1	1.7	77	94	53	9.8	0.0	0.0	26.7	7.8	NM	NM	0.4	3.1	0.0		
17	NM	262	248	1.2	1.7	80	95	56	9.4	0.0	0.0	29.4	7.8	NM	NM	0.4	3.1	0.0		
17.5	NM	218	252	1.3	1.7	82	97	88	9.1	0.0	0.0	32.1	7.8	NM	NM	0.4	3.1	0.0		
18	NM	218	256	1.4	1.7	84	98	90	8.7	0.0	0.0	34.9	7.8	NM	NM	0.4	3.1	0.0		
18.5	NM	218	248	1.5	1.7	86	238	92	8.3	0.0	0.0	37.6	7.8	NM	NM	0.4	3.1	0.0		
19	NM	218	248	1.6	1.8	89	241	94	8.0	TD = 18.5	0.0	40.3	7.8	NM	NM	0.5	TD = 18.5	0.0		
19.5	NM	218	248	1.7	1.8	91	245	96	7.6		0.0	43.0	7.8	NM	NM	0.5		0.0		
20	NM	218	248	1.8	1.8	93	248	98	7.3		0.0	45.7	7.8	NM	NM	0.5		0.0		
20.5	NM	218	248	1.9	1.8	171	252	100	6.9		0.0	48.4	7.8	NM	NM	0.5		0.0		
21	NM	218	248	1.9	1.8	171	255	102	6.6		0.0	51.1	7.8	NM	NM	0.5		0.0		
21.5	NM	218	248	2.0	1.8	171	259	104	6.2		0.0	53.8	7.8	NM	NM	0.5		0.0		
22	NM	218	248	2.1	1.9	171	262	106	5.9		0.0	56.5	7.8	NM	NM	0.5		0.0		
22.5	NM	156	248	2.2	1.9	171	245	108	5.5		0.0	59.2	7.8	NM	NM	0.5		0.0		
23	NM	152	248	2.3	1.9	171	243	110	5.2		0.0	62.0	7.8	NM	NM	0.6		0.0		
23.5	NM	148	248	2.4	1.9	171	241	112	4.8		0.0	64.7	7.8	NM	NM	0.6		0.0		
24	NM	144	248	2.5	1.9	171	238	114	4.5		0.0	67.4	7.8	NM	NM	0.6		0.0		
24.5	NM	140	248	2.6	2.0	171	236	116	4.1		0.0	70.1	7.8	NM	NM	0.6		0.0		
25	NM	136	248	0.3	2.0	165	234	118	0.4		0.0	72.8	7.8	NM	NM	0.6		0.0		
25.5	NM	132	248	0.3	2.0	166	180	120	0.4		0.0	99.4	7.8	NM	NM	22		0.0		
26	NM	128	248	0.4	2.0	167	174	122	0.4		0.0	102	7.8	NM	NM	23		0.0		

NOTES:  
### Values in red italicized font are mathematically calculated interpolations between the OVA readings obtained for the interval  
Asphalt at least 4" thick  
Sand  
Gravelly Sand  
Limerock Gravel  
Silty Sand  
Clayey Sand or Clayey Gravel  
NM Not Measured  
ft bls Feet Below Land Surface  
TD Total Depth (in ft bls)

S.E. ROCKFORD AREA 4  
LITHOLOGY AND ORGANIC VAPOR READINGS OF SOIL SAMPLES FROM BORINGS

DEPTH (ft bls)	BORINGS IN ZONE 2										BORINGS IN ZONE 1									
	"J" BORINGS				"K" BORINGS						"L" BORINGS				"M" BORINGS					
	MPE-J6	MPE-J5	MPE-J4	MPE-J3	MPE-K7	MPE-K6	MPE-K5	MPE-K4	MPE-K3	VP-L7	MPE-L7	MPE-L6	MPE-L5	MPE-L4	GWP-L4	MPE-M6	VP-M6	MPE-M5		
26.5	NM	124	248	0.4	2.0	167	169	124	0.4		0.0	104	NM	NM	NM	24		0.0		
27	NM	120	248	0.4	2.1	168	163	126	0.4		0.0	107	NM	NM	NM	25		0.0		
27.5	NM	116	278	0.4	2.1	169	157	113.0	0.4		78	109	NM	NM	NM	25		4.5		
28	NM	112	273	0.5	2.1	170	151	108	0.4		98	111	NM	NM	NM	26		4.2		
28.5	NM	159	268	0.5	146	171	146	102	0.4		117	114	NM	NM	NM	27		3.8		
29	NM	163	262	0.5	157	172	140	97	0.4		137	116	NM	NM	NM	28		3.5		
29.5	NM	168	257	0.5	168	172	134	92	0.4		156	119	NM	NM	NM	8.8		3.1		
30	NM	172	252	0.6	179	173	128	87	0.4		176	121	NM	NM	NM	9.1		2.8		
30.5	NM	176	247	0.6	190	174	123	81	0.4		155	84	NM	NM	NM	9.3		2.4		
31	NM	180	241	0.6	202	175	117	76	0.4		156	83	NM	NM	NM	9.6		2.1		
31.5	NM	185	236	0.6	213	176	111	81	0.4		156	83	NM	NM	NM	9.8		0.0		
32	NM	189	231	0.7	224	176	105	82	0.4		157	82	NM	NM	NM	10.1		0.0		
32.5	NM	171	198	0.7	235	177	100	83	0.4		158	81	NM	NM	NM	10.4		0.0		
33	NM	159	193	0.7	246	178	94	84	0.4		159	80	NM	NM	NM	10.6		0.0		
33.5	NM	147	188	7.8	370	205	88	86	0.4		159	80	NM	NM	NM	10.9		0.0		
34	NM	136	183	12.9	370	228	82	87	0.4		160	79	NM	NM	NM	11.1		0.0		
34.5	NM	124	178	18.0	370	252	77	88	0.1		161	78	NM	NM	NM	11.4		0.0		
35	NM	112	173	23.1	370	275	71	89	0.2		162	77	NM	NM	NM	11.7		0.0		
35.5	NM	107	168	28.1	370	298	121	71	0.2		162	77	NM	NM	NM	11.9		0.0		
36	NM	107	163	33.2	370	322	119	72	0.3		163	76	NM	NM	NM	12.2		0.0		
36.5	NM	107	158	38.3	370	345	116	72	0.4		164	75	NM	NM	NM	12.4		0.0		
37	NM	107	153	43.4	370	368	114	73	0.5		164	75	NM	NM	NM	12.7		0.0		
37.5	NM	107	185	48.5	370	392	111	74	0.5		165	74	NM	NM	NM	13.0		0.0		
38	NM	107	165	53.6	370	415	109	74	0.6		166	73	NM	NM	NM	13.2		0.0		
38.5	NM	107	145	58.6	370	438	106	75	0.7		167	72	NM	NM	NM	13.5		0.0		
39	NM	107	125	63.7	370	462	104	75	0.7		167	72	NM	NM	NM	13.7		0.0		
39.5	NM	107	105	68.8	370	485	101	76	0.8		168	71	NM	NM	NM	14.0		0.0		
40	TD = 39.5	TD = 39.5	TD = 39.5	TD = 39.5	TD = 39.5	TD = 39.5	TD = 39.5	TD = 39.5	TD = 39.5		TD = 39.5	TD = 39.5	TD = 39.5	TD = 39.5	NM	TD = 39.5		0.0		
40.5															NM			TD = 40		
41															NM					
41.5															NM					
42															NM					
42.5															NM					
43															NM					
43.5															NM					
44															NM					
44.5															NM					
45															NM					
45.5															NM					
46															NM					
46.5															NM					
47															NM					
47.5															TD = 47					
48																				
48.5																				
49																				
49.5																				
50																				

NOTES:  
### Values in red italicized font are mathematically calculated interpolations between the OVA readings obtained for the interval  
Asphalt at least 4" thick  
Sand  
Gravelly Sand  
Limerock Gravel  
Silty Sand  
Clayey Sand or Clayey Gravel  
NM Not Measured  
ft bls Feet Below Land Surface  
TD Total Depth (in ft bls)



## Daily Reports

# DAILY ACTIVITY REPORT

**Date:** 7/5/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** 75 degrees, mostly cloudy, slight breeze. Forecast to clear up a little and go into the 80s.

**Report Author:** David Rojas (CDM Smith)

**Personnel/visitors onsite:**

**CDM Smith:** David Rojas, John Grabs

**TRS:** Ted Highley, Jeff Riffe, Kevin Riffe

**Terra Probe Environmental Inc. (Terra):** Steve Overly, Joe Foihtik, Luke Wedwaldt

**K&S Engineers, Inc. (K&S):** None

**Visitors:** ComEd Crew

**Work Performed Today Onsite by TRS and Contractors for TRS:**

- ComEd crew was onsite to complete hookup.
- The Terra crew mobilized equipment to the site including a Geoprobe 6620 track-mounted Direct Push Technology (DPT) rig and John Deere tractor with front loader bucket.
- Two covered rollofs (for containerizing soil cuttings) were delivered to the site.

**Additional Notes and Observations:**

- TRS conducted a Health & Safety kickoff meeting with CDM Smith & Terra personnel.

**Verbal Communications between CDM Smith and TRS Regarding Concerns or Deficiencies:**

- Ted Highley informed David that contaminated soil (soil with apparent staining and odor) was previously encountered @ ~3-4 feet below ground surface while advancing a post hole for the gate fencepost located ~40 feet south southeast of proposed electrode H2 location.

**Potential Work Tomorrow:**

- Terra will begin installing ERH Multi-phase Extraction (MPE) electrodes in Zone 1 (inside the building).
- K&S will mobilize drilling equipment to the site and begin installing ERH MPE electrodes in Zone 2 (unpaved area west of the building).



# DAILY ACTIVITY REPORT

**Date:** 7/6/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** 71 degrees, cloudy, NW wind ~5-8 mph, light rain. There was moderate to heavy rain overnight. Forecast to cease raining by mid-morning and go into the 80s, but heavy rain tonight and into tomorrow.

**Report Author:** David Rojas (CDM Smith)

## Personnel/visitors onsite:

**CDM Smith:** David Rojas

**TRS:** Ted Highley, Jeff Riffe, Kevin Riffe

**Terra Probe Environmental Inc. (Terra):** Joe Fojtik, Luke Wedwaldt

**K&S Engineers, Inc. (K&S):** None

**Visitors:**

## Work Performed Today Onsite by TRS and Contractors for TRS:

### Installation of ERH Multi-phase Extraction (MPE) electrode L4 (incomplete)

- Terra used their Geoprobe 6620 track-mounted Direct Push Technology (DPT) rig to advance a pilot hole with 10.25" diameter solid stem augers (SSA) to 35 feet below ground surface (bgs). Terra pulled out of the hole (POH) with the SSAs then advanced a 12.25" diameter hollow stem augers (HSAs) with a wooden plug in the bit to 39.5 feet bgs charging the HSAs with water between flight connections after reaching 25 feet bgs.
- Lithology & Photoionization Detector (PID) Readings:

DEPTH (ft bgs)	PID (ppm)	LITHOLOGY
0 - 1	None	SAND, lt-med org brn, f-grn, dry, no odor
1 - 5	Collected	SAND, black, f-grn, dry, no odor
5 - 10		SAND, med org brn, f-m grn, dry, no odor
10 - 30		SAND, lt-med org brn, f-m grn, dry to sli moist, no odor
30 - 35		SAND, lt-med org brn, f-m grn, moist to wet, no odor
35 - 39.5		SAND, lt-med org brn, f-m grn, wet, no odor
- TRS lowered 4-inch diameter black iron Sch 40 pipe with capped end inside the HSAs. Pipe consists of three 10-foot joints with vertical 40-slot and one 8-foot joint only slotted in bottom 3 feet. Top of slotted interval ~4 feet bgs. Top of pipe is 0.7 feet above ground surface (ags).
- Terra began POH with HSAs while TRS and Terra personnel mixed and poured graphite/steel shot mix into HSAs (keeping mix at least one foot inside HSAs until last flight POH). Mix = 3 50-lb bags of SWS Earth Contact Backfill + 1 50-lb bag of iron shot. Required 10 mixes to bring graphite/iron shot to 2 feet bgs.
- Terra poured 1 50-lb bag of #4 silica sand in annulus from 2 feet bgs to 1.5 feet bgs.
- TRS tagged water level @ 27.4 feet bgs, tapped up and placed a safety cone over top of pipe.

### **Installation of ERH MPE electrode L5 (incomplete)**

- Terra used their DPT rig to advance a pilot hole with 10.25" diameter SSA to 35 feet bgs. Terra POH with the SSAs then advanced a 12.25" diameter HSAs with a wooden plug in the bit to 39.5 feet bgs charging the HSAs with water between flight connections after reaching 25 feet bgs.
- Lithology & PID Readings:

DEPTH (ft bgs)	PID (ppm)	LITHOLOGY
0 - 4	0.0	Gravely SAND, blk, f-grn, dry, no odor
4 - 8	0.0	SAND, black, f-grn, dry to sli moist, no odor
8 - 11	1.2	SAND, dk-med org brn, f-grn, moist, sli odor
11 - 26	7.8	SAND, dk org brn to gry brn, f-m grn, moist, strong odor
26 - 39.5		SAND, dk org brn to gry brn, f-m grn w/some co, wet, strong odor
- TRS and Terra lowered 4-inch diameter black iron Sch 40 pipe with capped end inside the HSAs. Pipe consists of three 10-foot joints with vertical 40-slot and one 8-foot joint only slotted in bottom 3 feet. Top of slotted interval ~4 feet bgs. Top of pipe is 0.9 feet ags.
- Terra began POH with HSAs while TRS and Terra personnel mixed and poured graphite/steel shot mix into HSAs (keeping mix at least one foot inside HSAs until last flight POH). Mix = 3 50-lb bags of SWS Earth Contact Backfill + 1 50-lb bag of iron shot. Required ~9.3 mixes to bring graphite/iron shot to 2 feet bgs.

### **Additional Notes and Observations:**

- TRS conducted a Health & Safety tailgate meeting with CDM Smith & Terra personnel.
- It appears that there is approximately a 2-inch gap between joints of the black iron Sch 40 pipe at each 4-inch coupler.
- Cuttings from the installation of MPE L4 were placed in south rolloff due to no evidence of contamination.
- Cuttings from the installation of MPE L5 were placed in north rolloff due to evidence of contamination based on odors and PID.
- Terra had difficulty bumping plug out of HSAs when installing MPE electrode L5. Terra approved TRS to use percussion head of DPT rig on cap temporarily installed on pipe to push plug out of HSAs.

### **Verbal Communications between CDM Smith and TRS Regarding Concerns or Deficiencies:**

- TRS did not receive delivery of vapor monitoring equipment until after Terra completed installation activities at the MPE electrode L4 location.
- Ted collected a sample of the cuttings from ~30 feet bgs at MPE L5 and placed them in a ziplock baggie. He suggested that TRS may have the sample analyzed to determine if contaminants present are amenable to treatment by ERH.
- Highest PID reading recorded by TRS in the workspace during installation of MPE electrode L5 was 22 ppm.

### **Potential Work Tomorrow:**

- Terra will continue installing ERH MPE electrodes in Zone 1 (inside the building).
- K&S will mobilize drilling equipment to the site and begin installing ERH MPE electrodes in Zone 2 (unpaved area west of the building).



# DAILY ACTIVITY REPORT

**Date:** 7/7/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site  
Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** 72 degrees, cloudy, wind is calm. Forecast to go into the 80s, but for quick moving light rain by mid-morning and severe weather late in the day.

**Report Author:** David Rojas (CDM Smith)

## Personnel/visitors onsite:

**CDM Smith:** David Rojas

**TRS:** Ted Highley, Jeff Riffe, Kevin Riffe

**Terra Probe Environmental Inc. (Terra):** Joe Fojtik, Luke Wedwaldt

**K&S Engineers, Inc. (K&S):** Eric DeWitt, Carlos Santana

**Visitors:**

## Work Performed Today Onsite by TRS and Contractors for TRS:

### Installation of ERH Multi-phase Extraction (MPE) electrode K7 (incomplete)

- Terra used their Geoprobe 6620 track-mounted Direct Push Technology (DPT) rig to advance a pilot hole with 10.25" diameter solid stem augers (SSA) to 35 feet below ground surface (bgs). Terra pulled out of the hole (POH) with the SSAs then advanced a 12.25" diameter hollow stem augers (HSAs) with a wooden plug in the bit to 39.5 feet bgs charging the HSAs with water between flight connections after reaching 20 feet bgs.

- Lithology & Photoionization Detector (PID) Readings:

DEPTH (ft bgs)	PID (ppm)	LITHOLOGY
0 - 4	0.0	Gravelly SAND, blk to dk gry brn, f-grn, debris - brick, dry, no odor
4 - 6	0.0	SAND w/ tr gravel, dk gry brn, f-m grn, dry, no odor
6 - 9	0.2	SAND, med org brn, f-m grn, sli moist, sli odor
9 - 12	0.1	SAND, med org brn, f-m grn, sli moist, no odor
12 - 28	1.5 - 2.1	SAND, lt-med org brn, f-m grn (coarser than above), moist becoming wet with depth, slight to mod odor
28 - 33	146 - 246	SAND, lt-med org brn, f-m grn, wet, strong odor
33 - 39.5	370	SAND, grayish brn, m w/ some f & c grn, wet, stained, strong odor

- TRS and Terra lowered 4-inch diameter black iron Sch 40 pipe with capped end inside the HSAs. Pipe consists of three 10-foot joints with vertical 40-slot and one 8-foot joint only slotted in bottom 3 feet. Top of slotted interval ~4 feet bgs. Top of pipe is 0.9 feet above ground surface (ags).
- Terra began POH with HSAs while TRS and Terra personnel mixed and poured graphite/steel shot mix into HSAs (keeping mix at least one foot inside HSAs until last flight POH). Mix = 3 50-lb bags of SWS Earth Contact Backfill + 1 50-lb bag of iron shot. Required 9.5 mixes to bring graphite/iron shot to 2 feet bgs.
- TRS tagged water level @ 27.05 feet bgs, tapped up and placed a safety cone over top of pipe.

### **Installation of ERH MPE electrode K6 (incomplete)**

- K&S used their Central Mine Equipment Co. (CME) 850 track mounted drilling rig to advance a pilot hole with 12.25" diameter HSA with center plug on 3-inch AW rod to 5 feet bgs. K&S POH with the HSA and center plug, installed a wooden plug in the bit, and drilled to 24.5 feet bgs before shutting down for the night.

- Lithology & PID Readings:

<u>DEPTH</u> (ft bgs)	<u>PID</u> (ppm)	<u>LITHOLOGY</u>
0 - 0.5	0.0	SAND, backfill, dry, no odor
0.5 - 5	0.0	Limerock GRAVEL, backfill, no odor
5 - 6	0.0	SAND, med brn, f-grn, dry, no odor
6 - 11	0.1 - 0.3	SAND, med org brn, f-grn, dry, sli odor
11 - 15	4.1 - 62	SAND, med org brn grading to med gry brn, f-m grn, sli moist, stained (increasing with depth), mod odor
15 - 20	73 - 93	SAND, med gry brn, f-m grn, sli moist, stained, mod to strong odor
20 - 24.5	171	SAND, med gry brn, f-m grn, sli moist, staining, strong odor

### **Additional Notes and Observations:**

- TRS conducted a Health & Safety tailgate meeting in the morning with CDM Smith & Terra personnel, then again in the afternoon with K&S personnel after they arrived.
- TRS tagged the water level in MPE L5 @ 27.33 feet bgs.
- TRS approved the relocation of proposed MPE K7 ~3 feet to the SE of originally proposed location to avoid overhead obstructions (fan shroud and garage door track).
- Cuttings from 0 - 12 feet bgs at MPE K7 location were placed in south rolloff and the rest were placed in the north rolloff due to evidence of contamination based on odors and PID.
- K&S mobilized a CME 850 track mounted drilling rig to the site.
- Cuttings from the installation of MPE K6 were placed in north rolloff due to evidence of contamination based on odors and PID.
- K&S personnel ceased drilling after advancing HSAs to 5 feet bgs and walked outside fenced area to talk with personnel that are parked on Marshal Street. TRS indicated they believe the personnel on the road are union personnel. Approximately one hour of downtime. The personnel on the road are taking pictures of the site and the Terra support vehicle.

### **Verbal Communications between CDM Smith and TRS Regarding Concerns or Deficiencies:**

- David informed TRS that K&S personnel were using motor oil to lubricate auger bolts while they were advancing HSAs at the MPE electrode K6 location. TRS asked K&S to cease using the motor oil and to use an environmentally friendly product such as Crisco oil for lubrication of downhole tools.

### **Potential Work Tomorrow:**

- Terra will continue installing ERH MPE electrodes in Zone 1 (inside the building).
- K&S will continue drilling at the MPE electrode K6 location and begin installing ERH MPE electrodes in Zone 2 (unpaved area west of the building).



# DAILY ACTIVITY REPORT

**Date:** 7/8/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site  
Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** 73 degrees, clear, wind is calm. Forecast to go into the 80s.

**Report Author:** David Rojas (CDM Smith)

## Personnel/visitors onsite:

**CDM Smith:** David Rojas

**TRS:** Ted Highley, Jeff Riffe, Kevin Riffe, Chris Thomas

**Terra Probe Environmental Inc. (Terra):** Joe Fojtik, Luke Wedwaldt

**K&S Engineers, Inc. (K&S):** Eric DeWitt, Carlos Santana

**Visitors:**

## Work Performed Today Onsite by TRS and Contractors for TRS:

### Installation of ERH Multi-phase Extraction (MPE) electrode L6 (incomplete)

- Terra used their Geoprobe 6620 track-mounted Direct Push Technology (DPT) rig to advance a pilot hole with 10.25" diameter solid stem augers (SSA) to 30 feet below ground surface (bgs). Terra pulled out of the hole (POH) with the SSAs then advanced a 12.25" diameter hollow stem augers (HSAs) with a wooden plug in the bit to 39.5 feet bgs charging the HSAs with water between flight connections after reaching 25 feet bgs.
- Lithology & Photoionization Detector (PID) Readings:

DEPTH (ft bgs)	PID (ppm)	LITHOLOGY
0 - 3	0.1	Gravely Silty SAND, blk, f-grn, sli moist, sli odor
3 - 9	0.1	Silty SAND, blk, f-grn, sli moist, sli odor
9 - 15	6.8	SAND, grn gry, f-grn, moist, stained, mod to strong odor
15 - 25	21.3 - 72.8	SAND, grn gry, f-m grn, stained, moist to wet, strong odor
25 - 30	99.4 - 121	SAND, grn gry, f-m grn, heavily stained, moist to wet, strong odor
30 - 39.5	84 - 71	SAND, grn gry, f-c grn (coarsening w/depth), staining decreasing w/depth, wet, strong odor
- TRS lowered 4-inch diameter black iron Sch 40 pipe with capped end inside the HSAs. Pipe consists of three 10-foot joints with vertical 40-slot and one 8-foot joint only slotted in bottom 3 feet. Top of slotted interval ~4 feet bgs.
- Terra began POH with HSAs while TRS and Terra personnel poured one 50-lb bag of iron shot then mixed and poured graphite/steel shot mix into HSAs (keeping mix at least one foot inside HSAs until last flight POH). Mix = 3 50-lb bags of SWS Earth Contact Backfill + 1 50-lb bag of iron shot. Required 9.25 mixes to bring graphite/iron shot to 2 feet bgs.
- TRS placed a safety cone over top of pipe.

## Additional Notes and Observations:

- Upon arriving at the site in the morning, there were five union vehicles parked on

Marshal Street and when 2 union people approached me from their cars and began to ask me about Terra I told them I was an employee with CDM Smith and was not at liberty to discuss the site activities with them.

- TRS conducted a Health & Safety tailgate meeting in the morning with Terra, K&S, and CDM Smith personnel.
- Cuttings from the installation of MPE L6 were placed in north rolloff due to evidence of contamination based on odors and PID readings.
- Before resuming drilling activities, K&S personnel left the site after talking with union personnel that were parked on Marshal Street. The personnel on the road began picketing. K&S personnel did not return to the site and TRS personnel had to secure the K&S rig and the top of the HSAs that were in the MPE K6 borehole and had been left uncovered.
- Terra had difficulty bumping plug out of HSAs when installing MPE electrode L6. Terra approved TRS to use percussion head of DPT rig on cap temporarily installed on pipe to push plug out of HSAs.

#### **Verbal Communications between CDM Smith and TRS Regarding Concerns or Deficiencies:**

- TRS personnel communicated with CDM Smith personnel regarding the dispute with the unions and the potential that K&S may not return to the site next week.

#### **Potential Work Next Week:**

- Terra will install the three remaining ERH MPE electrodes, two vapor piezometers, and two temperature monitoring points (TMPs) in Zone 1 (inside the building).
- K&S will complete drilling at the MPE electrode K6 location and begin installing ERH MPE electrodes in Zone 2 (unpaved area west of the building).



# DAILY ACTIVITY REPORT

**Date:** 7/11/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site  
Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** 79 degrees, clear skies, S wind ~3-5 mph. Forecast to go into the 90s (feels-like ~100) today, but stormy weather is forecast for tomorrow and Wednesday.

**Report Author:** David Rojas (CDM Smith)

**Personnel/visitors onsite:**

**CDM Smith:** David Rojas & John Grabs

**TRS:** Ted Highley & Jeff Riffe

**Terra Probe Environmental Inc. (Terra):** Joe Fojtik & Luke Wedwaldt

**K&S Engineers, Inc. (K&S):** None

**Visitors:**

**Work Performed Today Onsite by TRS and Contractors for TRS:**

**Installation of ERH Temperature Monitoring Probe (TMP)-M5 (incomplete)**

- Terra used their Geoprobe 6620 track-mounted Direct Push Technology (DPT) rig to advance 3.5" diameter drive rods equipped with an expendable pointed end cap to 37.7 feet below ground surface (bgs), charging the rods with water between rod connections after reaching 25 feet bgs.
- Terra filled the rods with neat cement then TRS personnel lowered 1.5" diameter copper pipe inside the rods. The copper pipe sections from bottom to top are 14' + 14' + 6' + 6' (10.25" were trimmed off the stickup after the pipe was lowered in the rods- so, the top section was actually on 5.15' in length), are attached with soldered couplers, and have a copper endcap soldered on the bottom. Terra pulled out of the hole (POH) with the rods, keeping the rods downhole full of neat cement. Top of copper pipe is 25.75" above ground surface (ags).
- Terra mixed and used 3 94-lb bags of Type I Portland cement to bring grout to the bottom of the concrete pad (~5" bgs).

**Installation of ERH Multi-phase Extraction (MPE) electrode L7 (incomplete)**

- Terra and TRS determined that the location of the electrode could be moved 2' south of the proposed location due to overhead obstructions and to facilitate moving the rig and mobilizing to other locations.
- Terra used their DPT rig to begin advancing a pilot hole with 10.25" diameter solid stem augers (SSAs). The SSAs were advanced to 20 feet bgs then Terra SDFN.
- Lithology & Photoionization Detector (PID) Readings:

DEPTH (ft bgs)	PID (ppm)	LITHOLOGY
0 - 5	2.2	Silty SAND, dk brn, f-grn, some-tr gravel, dry, tr odor
5 - 8	0.4	SAND, dk-med org brn, f grn, dry, no odor
8 - 20	0.1 - 0.0	SAND, lt yel brn, f grn w/some m-grn with depth, dry becoming moist below 18' bgs, no odor

**Additional Notes and Observations:**

- TRS conducted a Health & Safety tailgate meeting with CDM Smith & Terra personnel.
- Union personnel continue to picket in the roadway easements around the site.

**Verbal Communications between CDM Smith and TRS Regarding Concerns or Deficiencies:**

- TRS indicated that due to the union dispute, they do not anticipate that K&S personnel will return to the site until Terra has completed their work and left the site. Terra expects to be done with what they need to accomplish in Zone 1 by the end of the day on Thursday (7/14/16).

**Potential Work Tomorrow:**

- Terra will complete the installation of ERH MPE electrode MPE L7.



# DAILY ACTIVITY REPORT

**Date:** 7/12/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site  
Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** 74 degrees, cloudy, S wind ~5 mph. Forecast to start raining by mid-morning with possible thunderstorms and go into the mid to upper 80s.

**Report Author:** David Rojas (CDM Smith)

## Personnel/visitors onsite:

**CDM Smith:** David Rojas

**TRS:** Ted Highley & Jeff Riffe

**Terra Probe Environmental Inc. (Terra):** Joe Fojtik & Luke Wedwaldt

**K&S Engineers, Inc. (K&S):** None

**Visitors:**

## Work Performed Today Onsite by TRS and Contractors for TRS:

### Installation of ERH Multi-phase Extraction (MPE) electrode L7 (incomplete)

- Terra used their Geoprobe 6620 track-mounted Direct Push Technology (DPT) rig to continue advancing a pilot hole with 10.25" diameter solid stem augers (SSA) to 30 feet below ground surface (bgs). Terra pulled out of the hole (POH) with the SSAs then advanced a 12.25" diameter hollow stem augers (HSAs) with a wooden plug in the bit to 39.5 feet bgs charging the HSAs with water between flight connections after reaching 25 feet bgs.
- Lithology & Photoionization Detector (PID) Readings:

DEPTH (ft bgs)	PID (ppm)	LITHOLOGY
0 - 5	2.2	Silty SAND, dk brn, f-grn, some-tr gravel, dry, tr odor
5 - 8	0.4	SAND, dk-med org brn, f grn, dry, no odor
8 - 20	0.1 - 0.0	SAND, lt yel brn, f grn w/some m-grn with depth, dry becoming moist below 18' bgs, no odor
20 - 27	0.0	SAND, lt-med org brn, f-grn w/some m-grn, sli moist becoming moist w/depth, no odor
27 - 30	78 - 176	SAND, lt-med gry brn, f-m grn, moist to wet, stained, strong odor
30 - 39.5	155 - 168	SAND, dk grn gry, f-m grn w/tr to some c-grn (inc. w/depth, stained, wet, strong odor
- TRS and Terra lowered 4-inch diameter black iron Sch 40 pipe with capped end inside the HSAs. Pipe consists of three 10-foot joints with vertical 40-slot and one 8-foot joint only slotted in bottom 3 feet. Top of slotted interval ~4.5 feet bgs. Top of pipe is 0.3 feet above ground surface (ags).
- A 50-lb bag of shot was poured into HSAs then Terra began POH with HSAs while TRS and Terra personnel mixed and poured graphite/steel shot mix into HSAs (keeping mix at least 3 feet inside HSAs until last flight POH). Mix = 3 50-lb bags of SWS Earth Contact Backfill + 1 50-lb bag of iron shot. Required 9.5 mixes to bring graphite/iron shot to 2 feet bgs.

- Terra tagged water level (WL) in electrode at 27.0' bgs and placed a safety cone over top of pipe.

#### **Installation of ERH MPE electrode M6 (incomplete)**

- Terra used their DPT rig to advance a pilot hole with 10.25" diameter SSA to 30 feet bgs. Terra POH with the SSAs then advanced a 12.25" diameter HSAs with a wooden plug in the bit to 39.5 feet bgs charging the HSAs with water between flight connections after reaching 20 feet bgs.
- Lithology & PID Readings:
 

DEPTH (ft bgs)	PID (ppm)	LITHOLOGY
0 - 5	13.1	Silty SAND, blk to dusky dk brn, f-grn, tr to few gravel, dry to sli moist, sli odor
5 - 8	Not Meas.	SAND, med org brn, f-grn, dry to sli moist, tr odor
8 - 25	0.2 - 0.6	SAND, med yel brn, f-grn, dry to moist w/depth, no odor
25 - 29	22 - 28	SAND, dk org brn mottled w/ gry brn, f-grn w/few m-grn, moist to wet, mottled staining, mod to strong odor
29 - 39.5	8.8 - 14.0	SAND, dk greenish gry, f-m grn w/tr to some c-grn (increasing w/depth, wet, stained, mod strong odor
- TRS and Terra lowered 4-inch diameter black Sch 40 pipe with capped end inside the HSAs. Pipe consists of three 10-foot joints with vertical 40-slot and one 8-foot joint only slotted in bottom 3 feet. Top of slotted interval ~4 feet bgs.
- A 50-lb bag of shot was poured into HSAs then Terra began POH with HSAs while TRS and Terra personnel mixed and poured graphite/steel shot mix into HSAs (keeping mix at least one foot inside HSAs until last flight POH). Mix = 3 50-lb bags of SWS Earth Contact Backfill + 1 50-lb bag of iron shot. Required ~10.5 mixes to bring graphite/iron shot to 2 feet bgs.

#### **Additional Notes and Observations:**

- Union personnel remained in the right-of-way all day displaying signs indicating that they are on strike because Terra Probe is working onsite.
- TRS conducted a Health & Safety tailgate meeting with CDM Smith & Terra personnel.
- Cuttings from 0 - 27' bgs from the installation of MPE L7 were placed in south rolloff due to no evidence of contamination. Cuttings from 27 - 39.5' bgs from the installation of MPE L7 were placed in north rolloff due based on odors and PID.
- Cuttings from the installation of MPE M6 were placed in north rolloff due to evidence of contamination based on odors and PID.
- Terra had difficulty bumping plug out of the HSAs when installing MPE electrodes L7 and M6. Terra approved TRS to use percussion head of DPT rig on cap temporarily installed on pipes to push plugs out of HSAs.

#### **Verbal Communications between CDM Smith and TRS Regarding Concerns or Deficiencies:**

- Highest PID reading recorded by TRS in the workspace during installation of MPE electrodes L7 and M6 was 2.8 ppm.

#### **Potential Work Tomorrow:**

- Terra will complete installing ERH MPE electrodes and Temperature Monitoring Probes



(TMPs) in Zone 1 (inside the building).

# DAILY ACTIVITY REPORT

**Date:** 7/13/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site  
Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** 71 degrees, partly cloudy, S wind ~3 mph. Forecast to go into the high 80s today, but showers and possible stormy weather is forecast for late in the day.

**Report Author:** David Rojas (CDM Smith)

**Personnel/visitors onsite:**

**CDM Smith:** David Rojas

**TRS:** Ted Highley & Jeff Riffe

**Terra Probe Environmental Inc. (Terra):** Joe Fojtik & Luke Wedwaldt

**K&S Engineers, Inc. (K&S):** None

**Visitors:**

**Work Performed Today Onsite by TRS and Contractors for TRS:**

**Installation of ERH Multi-phase Extraction (MPE) electrode M5 (incomplete)**

- Terra used their Geoprobe 6620 track-mounted Direct Push Technology (DPT) rig to advance a pilot hole with 10.25" diameter solid stem augers (SSA) to 30 feet below ground surface (bgs). Terra pulled out of the hole (POH) with the SSAs then advanced a 12.25" diameter hollow stem augers (HSAs) with a wooden plug in the bit to 40 feet bgs charging the HSAs with water between flight connections after reaching 25 feet bgs.
- Lithology & Photoionization Detector (PID) Readings:

DEPTH (ft bgs)	PID (ppm)	LITHOLOGY
0 - 6	0.0	Silty SAND, dusky brn to blk, f-grn, few gravel, tr debris - glass & concrete rubble, dry, no odor
6 - 13	0.0	SAND, dk org brn, f-grn, dry, no odor
13 - 19	0.0	SAND, mod yel brn mottled w/ dk brn, f-grn, sli moist, no odor
19 - 24	0.0	SAND, lt to mod yel brn, f-grn, sli moist, no odor
24 - 27	0.0	SAND, mod to dk org brn, f-grn, sli moist to moist, no odor
27 - 31	4.5 - 2.1	SAND, mod org brn to lt-mod yel brn, f-m grn, streaks of staining, moist to wet, sli odor
31 - 40	0.0	SAND, lt-mod yel brn, f-m grn w/ tr-few c grn (coarsening w/ depth), wet, no odor
- TRS lowered 4-inch diameter black iron Sch 40 pipe with capped end inside the HSAs. Pipe consists of three 10-foot joints with vertical 40-slot and one 8-foot joint only slotted in bottom 3 feet. Top of slotted interval ~5 feet bgs.
- Terra began POH with HSAs while TRS and Terra personnel poured one 50-lb bag of iron shot then mixed and poured graphite/steel shot mix into HSAs (keeping mix at least 3 feet inside HSAs until last flight POH). Mix = 3 50-lb bags of SWS Earth Contact Backfill + 1 50-lb bag of iron shot. Required 10.75 mixes to bring graphite/iron shot to 2 feet bgs. Annulus from 2 feet bgs to 0.5 feet bgs were filled with #4 silica sand.
- Stick-up of 4-inch diameter black iron pipe = 0.45 feet above ground surface (ags). TRS



tagged water level (WL) @ 27.59 feet bgs.

- TRS pushed a 4.5 foot long 0.5-inch diameter copper pipe with a piece of screen material clamped onto the bottom in borehole adjacent to the black iron electrode leaving 0.5 feet of the pipe ags. TRS then placed a safety cone over top of the pipes.

#### **Installation of ERH Temperature Monitoring Probe (TMP)-K7 (incomplete)**

- Terra used their Geoprobe 6620 track-mounted DPT rig to advance 3.5" diameter drive rods equipped with an expendable pointed end cap to 37.9 feet bgs, charging the rods with water between rod connections after reaching 25 feet bgs.
- TRS personnel lowered 40 feet of 1.5" diameter copper pipe inside the rods. The copper pipe sections from bottom to top are 14' + 8' + 6' + 2.5' + 6' + 3.5' (~1.8' was trimmed off the stickup after the pipe was lowered in the rods to facilitate the removal of the rods. The sections of the copper pipe are attached with soldered couplers, and have a copper endcap soldered on the bottom. Terra POH with the rods, keeping the rods downhole full of neat cement.
- Terra mixed and used 2 94-lb bags of Type I Portland cement to bring grout from 37.9 feet bgs to ~1 foot bgs.

#### **Additional Notes and Observations:**

- TRS conducted a Health & Safety tailgate meeting with CDM Smith & Terra personnel.
- Union personnel continue to picket in the roadway easement south of the site.
- TRS measured stick-up of 4-inch diameter black iron pipe electrode of MPE-M6 and WL in the pipe. Stick-up = 0.65 feet ags and WL = 27.48 feet bgs.
- TRS & Terra filled the annuluses of all seven of the MPE electrode boreholes in Zone 1 between 2 feet bgs to 0.5 feet bgs with #4 silica sand.
- TRS pushed 4.5 foot long 0.5-inch diameter copper drip pipes each with a piece of screen material clamped onto the bottom of the pipe into the boreholes of MPE M6 and MPE-L7 leaving 0.5 feet of the pipes ags. Drip pipes have now been installed in all seven of the MPEs that have been installed in Zone 1.

#### **Verbal Communications between CDM Smith and TRS Regarding Concerns or Deficiencies:**

- TRS indicated that they do not anticipate that K&S personnel will return to the site until Monday July 18<sup>th</sup>.
- TRS expects that the stainless-steel materials required for the installation of the vapor monitoring probes will be delivered tomorrow morning.

#### **Potential Work Tomorrow:**

- Terra will advance a soil probe in the vicinity of the entry gate so CDM Smith can collect a soil sample and they will install vapor monitoring probes VP-M6 and VP-L7. Terra expects to be done with what they need to accomplish in Zone 1 and mobilize offsite with their equipment by the end of the day tomorrow (7/14/16).

# DAILY ACTIVITY REPORT

**Date:** 7/14/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site  
Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** 69 degrees, clear, W wind ~3 mph. Forecast to go into the mid 80s today.

**Report Author:** David Rojas (CDM Smith)

## Personnel/visitors onsite:

**CDM Smith:** David Rojas

**TRS:** Ted Highley & Jeff Riffe

**Terra Probe Environmental Inc. (Terra):** Joe Fojtik & Luke Wedwaldt

**K&S Engineers, Inc. (K&S):** None

**Visitors:**

## Work Performed Today Onsite by TRS and Contractors for TRS:

### Installation of ERH Vapor Piezometer (VP) L7 (incomplete)

- TRS approved the relocation of the proposed location of VP-L7 2.5 feet south of the proposed location due to the presence of a wall. Terra used their Geoprobe 6620 track-mounted Direct Push Technology (DPT) rig to advance a borehole with 4" diameter solid stem augers (SSA) to 18.5 feet below ground surface (bgs). Terra pulled out of the hole (POH) with the SSAs and the hole remained open to 18.5 feet bgs. Had to wait 1.5 hours for the delivery of the stainless steel pipe before the piezometer could be constructed.
- Lithology & Photoionization Detector (PID) Readings:

DEPTH (ft bgs)	PID (ppm)	LITHOLOGY
0 - 3	0.0	Gravely SAND, dk org brn mottled w/lt-mod org brn, mod silty, f-c grn, gravel inc. slag, dry, no odor
3 - 6	0.0	Silty SAND, dusky brn to blk, f-m grn, tr gravel, sli moist, no odor
6 - 12	0.0	SAND, mod-dk org brn, f-grn, tr fine gravel, sli moist, no odor
12 - 15	0.0	SAND, lt yel brn mottled w/mod brn, f-grn, dry, no odor
15 - 18.5	0.0	SAND, lt yel brn, f-grn, dry, no odor
- Once the stainless steel pipe was delivered to the site, Terra backfilled the borehole to 13 feet bgs with #4 silica sand then TRS lowered a 1.5-inch diameter 2.5-foot section of V-wrapped stainless steel screen (20 slot) with capped end screwed onto one 5-foot section of 1.5-inch diameter stainless steel riser pipe connected to a 6.2-foot long section of 1.5-inch Sch 80 CPVC pipe with a CPVC female coupler inside the borehole. Couplers and exposed threads add ~0.9 feet of length. The screened interval ~13.0 - 10.5 feet bgs. Terra poured additional #4 silica sand into the borehole bringing the sand pack up to 8 feet bgs then filled the remainder of the annulus with neat cement grout to surface.
- Stick-up of 1.5-inch diameter CPVC pipe = 1.4 feet above ground surface (ags).



### Installation of ERH VP-M6 (incomplete)

- Terra used their Geoprobe 6620 track-mounted DPT rig to advance a borehole with 4" diameter SSAs to 18.5 feet bgs. Terra POH with the SSAs and the hole remained open to 18.5 feet bgs.
- Lithology & Photoionization Detector (PID) Readings:

DEPTH (ft bgs)	PID (ppm)	LITHOLOGY
0 - 2	2.2	Gravely SAND, lt to mod gry brn, f-c grn, gravel is f-c sized, dry, sli odor
2 - 4	3.8	Gravely SAND, mod to dk gry, f-c grn, gravel is f-m sized, dry, sli odor
4 - 7	5.8	Silty SAND, blk, f-grn w/few med-grn, sli moist, mod odor
7 - 10	6.6	Silty SAND, dusky brn to blk, f-grn, sli moist, mod to strong odor
10 - 18.5	3.1	SAND, mod yel brn mottled w/gry brn, f-grn, streaks of staining incr. w/depth to pervasive staining, moist becoming wet, mod to strong odor
- Terra backfilled the borehole to 13 feet bgs with #4 silica sand then TRS lowered a 1.5-inch diameter 2.5-foot section of V-wrapped stainless steel screen (20 slot) with capped end screwed onto one 5-foot section of 1.5-inch diameter stainless steel riser pipe connected to a 6.2-foot long section of 1.5-inch Sch 80 CPVC pipe with a CPVC female coupler inside the borehole. Couplers and exposed threads add ~0.9 feet of length. The screened interval ~13.0 - 10.5 feet bgs. Terra poured additional #4 silica sand into the borehole bringing the sand pack up to 8 feet bgs then filled the remainder of the annulus with neat cement grout to surface.
- Stick-up of 1.5-inch diameter CPVC pipe = 1.4 feet ags.

### Collection of Soil Sample A4-PLOT 160714

- Terra used their Geoprobe 6620 track-mounted DPT rig to advance 2" diameter soil probes to 5 feet bgs adjacent to the eastern gate post where TRS noted odorous black soil during the installation of the fence post.
- Lithology & Photoionization Detector (PID) Readings:

DEPTH (ft bgs)	PID (ppm)	LITHOLOGY
0 - 0.2	No Read	Asphalt
0.2 - 1.3	6.8	Gravely SAND, lt gry mottled w/dk brn & blk, f-c grn, dry, mod to strong odor
1.3 - 3.5	2.8 - 0.4	SAND, blk grading to dusky brn, f-grn, mod silty, dry to sli moist, mod to strong odor
3.5 - 4.5	0.1	SAND, dk org brn, f-grn, dry to sli moist, sli odor
4.5 - 5.0	0.0	SAND, med org brn, f-grn, tr gravel, dry to sli moist, sli odor
- CDM Smith collected a soil sample from 0.2-3.5' bgs and placed the material in clear glass 2-oz sample container. Based on a discussion with John Grabs (CDM Smith) the sample was submitted to STAT Analysis Corp. laboratory to be analyzed for volatile organic contaminants (VOCs) with standard turn-around time. An additional sample was placed in a 16-ounce sample container and will be kept refrigerated just in case additional analyses are desired.

### Additional Notes and Observations:

- TRS conducted a Health & Safety tailgate meeting with CDM Smith & Terra personnel.
- Union personnel arrived late in the morning and were observed in the roadway

- easements around the site for the rest of the day while Terra personnel were onsite.
- TRS received shipment of stainless steel supplies for vapor piezometers at 11:20 AM.
- Terra demobilized from the site.

**Verbal Communications between CDM Smith and TRS Regarding Concerns or Deficiencies:**

- TRS indicated that they do not anticipate that K&S personnel will return to the site until Monday July 18<sup>th</sup>.

**Potential Work Tomorrow:**

- TRS will continue to inventory supplies and partially assemble piping in preparation for additional installations of multiphase extraction (MPE) electrodes, VPs and temperature monitoring points (TMPs) once K&S returns to the site.



# DAILY ACTIVITY REPORT

**Date:** 7/18/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site  
Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** 77 degrees, cloudy, wind is 1-3 mph SW. Forecast to go into the 80s.

**Report Author:** David Rojas (CDM Smith)

## Personnel/visitors onsite:

**CDM Smith:** David Rojas & John Grabs

**TRS:** Jeff Riffe & Brad Morris

**K&S Engineers, Inc. (K&S):** Eric DeWitt & Carlos Santana

**Visitors:**

## Work Performed Today Onsite by TRS and Contractors for TRS:

### Installation of ERH Multi-phase Extraction (MPE) electrode K6 (incomplete)

- K&S used their Central Mine Equipment Co. (CME) 850 track mounted drilling rig to resume advancing 12.25" diameter hollow stem augers (HSAs) with a wooden plug in the bit, drilling to 39.5 feet below ground surface (bgs). K&S had already drilled to 24.5 feet bgs on 7/7/16. K&S charged the HSAs with water between flight connections.
- Lithology & Photoionization Detector (PID) Readings:

DEPTH (ft bgs)	PID (ppm)	LITHOLOGY
25.4 - 33	165 - 178	SAND, yel brn to mod gry brn, f-grn w few m-grn, moist becoming wet w/depth, strong odor
33 - 39.5	205 - 485	SAND, mod grn gry, f-m grn w/tr to few coarse (coarsening w/depth), wet, staining, strong odor, inc. PID w/depth
- K&S lowered 4-inch diameter black iron Sch 40 pipe with capped end inside the HSAs. Pipe consists of one 21-foot long joint with vertical 40-slot and one 18.5-foot joint only slotted in bottom 13.5 feet. TRS applied conductive paste on threads of pipe prior to making the connection. Top of slotted interval ~4 feet bgs.
- Before beginning to pull out of the hole (POH) with the HSAs, K&S poured one 50-lb bag of steel shot and one graphite/steel shot mix into the HSAs. Mix = 3 50-lb bags of SWS Earth Contact Backfill + 1 50-lb bag of iron shot. K&S continued POH with HSAs while pouring graphite/steel shot mix into HSAs (keeping mix at least two foot inside HSAs until last flight POH). Required 9.25 mixes to bring graphite/iron shot to 2 feet bgs.
- TRS pushed a drip tube (a 4.5 foot long 0.5-inch diameter copper pipe with a piece of screen material clamped onto the bottom) in the borehole adjacent to the black iron electrode leaving 0.5 feet of the pipe above ground surface (ags) then dumped a half of a 50-lb bag of #4 silica sand in the annulus to fill from 2 feet bgs to 1 foot bgs.

### Installation of ERH MPE electrode K5 (incomplete)

- K&S used their CME 850 track mounted drilling rig to advance a pilot hole with 12.25" diameter HSA with center plug on 3-inch AW rod to 5 feet bgs. K&S POH with the HSA and center plug, installed a wooden plug in the bit, and drilled to 24.5 feet bgs before

shutting down for the night.

- Lithology & PID Readings:

<u>DEPTH</u> <u>(ft bgs)</u>	<u>PID</u> <u>(ppm)</u>	<u>LITHOLOGY</u>
0 - 0.5	0.0	SAND, backfill, dry, no odor
0.5 - 4	20.2	Limerock GRAVEL, backfill, sli odor
4 - 6	0.7	SAND, mod brn, f-grn, dry, no odor, some gravel (from above?)
6 - 9	0.1	SAND, mod to dk yel brn, f-grn, dry, no odor
9 - 13	68.8 - 110	SAND, dk gry, f-m grn, sli moist, stained (increasing with depth), strong odor
13 - 18	85 - 98	SAND, dk grn gry, f-grn, sli moist, stained, strong odor
18 - 22	238 - 262	SAND, mod grn gry, f-grn, sli moist, staining, strong odor
22 - 25	245 - 234	SAND, lt to mod grn gry, f-grn, dry to sli moist, some staining, strong odor

#### **Additional Notes and Observations:**

- TRS conducted a Health & Safety tailgate meeting in the morning with Wolf Brothers Tree Service (WBTS), K&S and CDM Smith personnel.
- WBTS personnel trimmed the limbs of the elm tree that were in the way of the derrick of the drill rig at the proposed locations of MPE H6 & J6 and Groundwater Monitoring Piezometer (GMP) GWP-H6.
- Cuttings from the installation of MPE K6 were placed in north rolloff due to evidence of contamination based on odors and PID readings.
- Cuttings from the installation of MPE K5 from surface to 9 feet bgs were placed in south rolloff due to a lack of evidence of contamination based on odors and PID readings. Cuttings from the installation of MPE K5 from below 9 feet bgs were placed in the north rolloff due to evidence of contamination based on odors and PID readings..

#### **Verbal Communications between CDM Smith and TRS Regarding Concerns or Deficiencies:**

- Based on information obtained by TRS personnel from K&S personnel, K&S personnel will only be working 8 hours each day to avoid overtime charges.
- K&S does not have tooling onsite to do installations of anything except the MPEs. They will be bringing the tooling to do the Temperature Monitoring Points (TMPs), the Vapor Piezometers (VPs) and GMPs next week.

#### **Potential Work Tomorrow:**

- K&S will continue installing ERH MPE electrodes in Zone 2 (unpaved area west of the building).



# DAILY ACTIVITY REPORT

**Date:** 7/19/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site  
Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** 69 degrees, clear, wind is 1-3 mph S. Forecast to go into the upper 80s.

**Report Author:** David Rojas (CDM Smith)

## Personnel/visitors onsite:

**CDM Smith:** David Rojas

**TRS:** Jeff Riffe & Brad Morris

**K&S Engineers, Inc. (K&S):** Eric DeWitt & Carlos Santana

**Visitors:** Tim Drexler (IEPA) & Crystal Nickel-Reuss (CH<sub>2</sub>M Hill)

## Work Performed Today Onsite by TRS and Contractors for TRS:

### Installation of ERH Multi-phase Extraction (MPE) electrode K5 (incomplete)

- K&S used their Central Mine Equipment Co. (CME) 850 track-mounted drilling rig to resume advancing 12.25" diameter hollow stem augers (HSAs) with a wooden plug in the bit, drilling to 39.5 feet below ground surface (bgs). K&S had already drilled to 25 feet bgs on 7/18/16. K&S charged the HSAs with water between flight connections.
- Lithology & Photoionization Detector (PID) Readings:

DEPTH    PID

(ft bgs)    (ppm)    LITHOLOGY

25 - 35	180 - 71*	SAND, mod grn gry, f-m grn w/tr to few c-grn, moist becoming wet with depth, stained, mod to strong odor. *Lower PID reading may have been due to influence of water introduced from charging HSAs - cuttings very soupy.
35 - 39.5	121 - 101	SAND, mod grn gry, f-m grn w/some c-grn, wet, mod to strong odor

- K&S lowered 4-inch diameter black iron Sch 40 pipe with capped end inside the HSAs. Pipe consists of one 21-foot long joint with vertical 40-slot and one 18.5-foot joint only slotted in bottom 13.5 feet. TRS applied conductive paste on threads of pipe prior to making the connection. Top of slotted interval ~3 feet bgs.
- Before beginning to pull out of the hole (POH) with the HSAs, K&S poured one 50-lb bag of steel shot and one graphite/steel shot mix into the HSAs. Mix = 3 50-lb bags of SWS Earth Contact Backfill + 1 50-lb bag of iron shot.
- K&S had difficulty bumping plug out of HSAs when installing MPE electrode K5. TRS approved K&S to use their standard penetration test (SPT) hammer on the rig to push plug out of HSAs by driving the black iron pipe with a cap temporarily installed on it. This successfully dislodged the plug, but stripped the threads and jammed the cap on the pipe. TRS indicated that since there are still undamaged threads left on the stickup pipe, they believe they can cut the cap off the pipe and repair the threads on the stickup.

- K&S continued POH with HSAs while pouring graphite/ steel shot mix into HSAs (keeping mix at least two foot inside HSAs until last flight POH). Required 9.75 mixes to bring graphite/iron shot to 2 feet bgs.
- TRS pushed a drip tube (a 4.5 foot long 0.5-inch diameter copper pipe with a piece of screen material clamped onto the bottom) in the borehole adjacent to the black iron electrode leaving 0.5 feet of the pipe above ground surface (ags) then dumped a 3/4 of a 50-lb bag of #4 silica sand in the annulus to fill from 2 feet bgs to 1 foot bgs.

#### **Installation of ERH MPE electrode K4 (incomplete)**

- K&S used their CME 850 track mounted drilling rig to advance a pilot hole with 12.25" diameter HSAs with center plug on 3-inch AW rod to 5 feet bgs. K&S POH with the HSA and center plug, installed a wooden plug in the bit, and drilled to 39.5 feet bgs charging the HSAs with water between flight connections after reaching 25 feet bgs.
- Lithology & PID Readings:
 

<u>DEPTH</u> <u>(ft bgs)</u>	<u>PID</u> <u>(ppm)</u>	<u>LITHOLOGY</u>
0 - 0.5	0.0	SAND - backfill, no odor
0.5 - 6	14.5	LIMEROCK GRAVEL - backfill, blk, sli odor
6 - 8	49.5	Silty SAND, med to dk gry, f-grn, dry to sli moist, sli to mod odor
8 - 12	68 - 28	SAND, dk grn to brn gry, f-grn, sli silty, stained, sli moist to moist, mod odor
12 - 17	31 - 56	SAND, dk grn gry, f-grn, spotty stained, sli moist, mod odor
17 - 27	88 - 126	SAND, lt to mod yel brn, f-grn, dry to sli moist becoming moist @ 25' bgs, mod to strong odor
27 - 31	113 - 76	SAND, mod grn gry, f-grn w/ few m-grn, spotty staining, wet, mod to strong odor
31 - 35	81 - 89	SAND, mod grn gry, f-m grn w/ tr to few c-grn, some staining, wet, mod to strong odor
35 - 39.5	71 - 76	SAND, mod to dk grn gry grading to med gry brn, f-m grn w/ some c-grn, some staining, wet, mod to strong odor
- K&S lowered 4-inch diameter black iron Sch 40 pipe with capped end inside the HSAs. Pipe consists of one 21-foot long joint with vertical 40-slot and one 18.5-foot joint only slotted in bottom 13.5 feet. TRS applied conductive paste on threads of pipe prior to making the connection. Top of slotted interval ~3 feet bgs.
- Before beginning to POH with the HSAs, K&S poured one 50-lb bag of steel shot and one graphite/steel shot mix into the HSAs. Mix = 3 50-lb bags of SWS Earth Contact Backfill + 1 50-lb bag of iron shot.
- K&S had difficulty bumping plug out of HSAs when installing MPE electrode K5. TRS approved K&S to push plug out of HSAs by pushing down with the drill head on the black iron pipe with a cap temporarily installed on it. This successfully dislodged the plug.
- K&S continued POH with HSAs while pouring graphite/ steel shot mix into HSAs (keeping mix at least two foot inside HSAs until last flight POH). Required 9.75 mixes to bring graphite/iron shot to 2 feet bgs.
- TRS pushed a drip tube (a 4.5 foot long 0.5-inch diameter copper pipe with a piece of screen material clamped onto the bottom) in the borehole adjacent to the black iron electrode leaving 0.5 feet of the pipe ags then dumped a 3/4 of a 50-lb bag of #4 silica sand in the annulus to fill from 2 feet bgs to 1 foot bgs.
- David measured the stickup and WL. Stickup = 1.05' ags WL = 27.65' bgs



### **Installation of ERH MPE electrode J3 (incomplete)**

- K&S used their CME 850 track mounted drilling rig to advance a pilot hole with 12.25" diameter HSA with center plug on 3-inch AW rod to 5 feet bgs. K&S POH with the HSA and center plug, installed a wooden plug in the bit, and drilled to 24.5 feet bgs before shutting down for the night (SDFN).
- Lithology & PID Readings:

DEPTH (ft bgs)	PID (ppm)	LITHOLOGY
0 - 0.5	13.1	SAND & GRAVEL, yel brn, dry, sli odor
0.5 - 1	28.7	SAND & GRAVEL, dk yel brn, dry, sli to mod odor
1 - 3	44	Silty SAND, blk, f-grn w/few m-grn, few to some gravel dec. w/depth, dry, sli to mod odor
3 - 6	6.8 - 10.1	Clayey Gravely SAND, blk grading to dk dusky brn, f-grn, clay has low to mod plasticity, dry to sli moist, sli odor
6 - 9	7.4 - 5.6	Silty SAND, mod org brn mottled w/dk brn, f-grn, dry, sli odor
9 - 16	4.5 - 1.8	SAND, mod yel org brn mottled w/dk brn, f-grn, dry, no odor
16 - 24.5	1.1 - 2.6	SAND, lt yel brn, f-grn, dry, no odor
- K&S ceased advancing 12.25" diameter HSAs @ 22 feet bgs due to the drill rig engine overheating. Later, drilled to 24.5' bgs before SDFN.

### **Additional Notes and Observations:**

- TRS conducted a Health & Safety tailgate meeting in the morning with K&S and CDM Smith personnel.
- While K&S were drilling at the proposed MPE-K4 location, Tim Drexler (IEPA) & Crystal Nickel-Reuss (CH<sub>2</sub>M Hill) were observed photographing the site from the Marshall ROW. Eventually, they came onto the site and inquired with Brad regarding the possibility of temporarily storing on this site five drums of investigative derived wastes (IDW) from the advancement of borings for a soil vapor investigation. They indicated that the site where the material will be generated beginning in approximately 3 weeks is an unsecured EPA site with suspected solvent contamination. Brad said he would discuss it with management and get back with Tim.
- David measured the stickup and WL of ERH MPE-K6 installed on 7/18/16. Stickup = 0.66' ags WL = 27.71' bgs
- K&S personnel spoke w/their office and have gotten their request approved to have a truck-mounted drill rig brought to the site to exchange for the existing rig (since it is overheating and the tracks are tearing up the asphalt parking lot). The new rig will be delivered either tonight or first thing tomorrow morning. They will likely not be bringing the smaller augers needed for the installation of Temperature Monitoring Points (TMPs), the Vapor Piezometers (VPs) and Groundwater Monitoring Piezometers (GMPs).

### **Verbal Communications between CDM Smith and TRS Regarding Concerns or Deficiencies:**

- TRS personnel communicated with CDM Smith personnel regarding K&S not having the downhole tools onsite for installing the TMPs, VPs and GMPs until next week. Both TRS and K&S believe they will be able to maneuver the rig that will be arriving tomorrow around the installed MPE to install the TMPs, VPs and GMPs that are in and amongst the MPEs once they are installed.

**Potential Work Tomorrow:**

- K&S will continue to install MPE electrodes in Zone 2 (unpaved area west of the building).



# DAILY ACTIVITY REPORT

**Date:** 7/20/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** 70 degrees, clear, wind is calm. Forecast is for the temperature to go into the mid to upper 80s and there is a slight chance for showers and thunderstorms in the afternoon.

**Report Author:** David Rojas (CDM Smith)

**Personnel/visitors onsite:**

**CDM Smith:** David Rojas

**TRS:** Jeff Riffe & Brad Morris

**K&S Engineers, Inc. (K&S):** Eric DeWitt & Carlos Santana

**Visitors:** None

**Work Performed Today Onsite by TRS and Contractors for TRS:**

**Installation of ERH Multi-phase Extraction (MPE) electrode J3 (incomplete)**

- K&S moved their Central Mine Equipment Co. (CME) 850 track-mounted drilling rig off the location into the staging area and move in and rigged up (MIRU) their Diedrich-120 (D-120) truck-mounted drilling rig and resumed advancing 12.25" diameter hollow stem augers (HSAs) with a wooden plug in the bit, drilling to 39.5 feet below ground surface (bgs). K&S had already drilled to 24.5 feet bgs on 7/19/16. K&S charged the HSAs with water between flight connections.
- Lithology & Photoionization Detector (PID) Readings:

DEPTH (ft bgs)	PID (ppm)	LITHOLOGY
24.5 - 33	0.3 - 0.7	SAND, lt to mod yel org brn, f-grn w/tr to few m-grn, moist becoming wet below ~27' bgs, stained, no odor.
33 - 39.5	7.8 - 68.8	SAND, mod gry brn, f-m grn w/tr to few c-grn, wet, spotty staining becoming more prevalent w/depth, sl to mod odor, PID readings dropped into the 40s below ~38' bgs
- K&S lowered 4-inch diameter black iron Sch 40 pipe with capped end inside the HSAs. Pipe consists of one 21-foot long joint with vertical 40-slot and one 18.5-foot joint only slotted in bottom 13.5 feet. TRS applied conductive paste on threads of pipe prior to making the connection. Top of slotted interval ~3.5 feet bgs.
- Before beginning to pull out of the hole (POH) with the HSAs, K&S poured one 50-lb bag of steel shot and one graphite/steel shot mix into the HSAs. Mix = 3 50-lb bags of SWS Earth Contact Backfill + 1 50-lb bag of iron shot.
- K&S continued POH with HSAs while pouring graphite/steel shot mix into HSAs (keeping mix at least two foot inside HSAs until last flight POH). Required 10 mixes to bring graphite/iron shot to 2 feet bgs.
- TRS pushed a drip tube (a 4.5 foot long 0.5-inch diameter copper pipe with a piece of screen material clamped onto the bottom) in the borehole adjacent to the black iron

electrode leaving 0.5 feet of the pipe above ground surface (ags) then dumped a 3/4 of a 50-lb bag of #4 silica sand in the annulus to fill from 2 feet bgs to 1 foot bgs.

#### **Installation of ERH MPE electrode K3 (incomplete)**

- K&S used their D-120 truck-mounted drilling rig to advance a pilot hole with 12.25" diameter HSA with center plug on 3-inch AW rod to 5 feet bgs. K&S POH with the HSA and center plug, installed a wooden plug in the bit, and drilled to 24.5 feet bgs before shutting down for the night (SDFN).
- Lithology & PID Readings:

DEPTH (ft bgs)	PID (ppm)	LITHOLOGY
0 - 0.5	0.0	Gravely SAND, lt to mod yel brn, gravel is f-m sized limerock, dry, no odor
0.5 - 3	0.8	LIMEROCK GRAVEL - backfill, no odor
3 - 5	48 - 90	Silty SAND, blk to dk gry, f-grn, few to some gravel dec. w/depth, sli to mod clayey, dry, staining, mod to strong odor
5 - 7	7.5	Silty SAND, mod yel brn mottled w/dk brn, f-grn, dry, sli odor
7 - 10	2.9	SAND, lt to mod yel brn mottled w/dk brn, f-grn, dry, tr odor
10 - 11	16.4	SAND, grayish yel brn mottled w/dk gry brn, f-grn, dry, sli odor
11 - 24.5	13.3 - 4.1	SAND, lt to mod yel brn, f-grn, dry, sli odor dec. w/depth
- K&S ceased advancing 12.25" diameter HSAs @ 24.5 feet bgs because they would not be able to complete the installation of the electrode within their 8-hour work day. SDFN.

#### **Additional Notes and Observations:**

- TRS conducted a Health & Safety tailgate meeting in the morning with K&S and CDM Smith personnel.
- K&S personnel had to drive to their shop in Highland, Indiana to pick up a truck-mounted drill rig to exchange for the existing rig (since it is overheating and the tracks are tearing up the asphalt parking lot). The K&S personnel showed up at the site with the D-120 rig at 10:15 this morning. They brought 3.25" augers (which make a 7.25" diameter hole) but they do not have any wooden plugs for these smaller augers.
- While at lunch, inclement weather with light to moderately heavy rainfall occurred. K&S personnel had already informed TRS that they would not work in the rain. After 40 minutes, the rain became only a light drizzle before terminating completely and K&S MIRU at the proposed MPE-K3 location and drilled to 24.5' bgs. They ceased drilling at this "point-of-no-stop" depth because they would not be able to complete the installation of the electrode within their 8-hour work day (a constraint established by K&S). The depth of 24.5' bgs was established as a "point-of-no-stop" depth by TRS because once the augers are advanced below the water table (WT), the electrode and graphite/shot mix must be installed otherwise the HSAs might partially fill with sediment if left overnight below the WT.

#### **Verbal Communications between CDM Smith and TRS Regarding Concerns or Deficiencies:**

- None.



**Potential Work Tomorrow:**

- K&S will continue to install MPE electrodes in Zone 2 (unpaved area west of the building).

# DAILY ACTIVITY REPORT

**Date:** 7/21/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** 78 degrees, foggy, wind is calm. Forecast is for clear skies and the temperature to go into the mid to upper 90s and there is a heat warning for the afternoon.

**Report Author:** David Rojas (CDM Smith)

**Personnel/visitors onsite:**

**CDM Smith:** David Rojas

**TRS:** Jeff Riffe & Brad Morris

**K&S Engineers, Inc. (K&S):** Eric DeWitt & Carlos Santana

**Visitors:** None

**Work Performed Today Onsite by TRS and Contractors for TRS:**

**Installation of ERH Multi-phase Extraction (MPE) electrode K3 (incomplete)**

- K&S used their Diedrich-120 (D-120) truck-mounted drilling rig to resumed advancing 12.25" diameter hollow stem augers (HSAs) with a wooden plug in the bit, drilling to 39.5 feet below ground surface (bgs). K&S had already drilled to 24.5 feet bgs on 7/18/16. K&S charged the HSAs with water between flight connections.
- Lithology & Photoionization Detector (PID) Readings:

DEPTH (ft bgs)	PID (ppm)	LITHOLOGY
24.5 - 34	0.4	SAND, lt to mod yel brn grading to lt to mod gry brn, f-grn becoming f-m grn w/ depth, sli moist becoming wet below ~28' bgs, tr to sli odor.
34 - 39.5	0.1 - 0.8	SAND, lt to mod gry brn, f-m grn w/ few c-grn, wet, sl to mod odor
- K&S lowered 4-inch diameter black iron Sch 40 pipe with capped end inside the HSAs. Pipe consists of one 21-foot long joint with vertical 40-slot and one 18.5-foot joint only slotted in bottom 13.5 feet. TRS applied conductive paste on threads of pipe prior to making the connection. Top of slotted interval ~3.5 feet bgs.
- Before beginning to pull out of the hole (POH) with the HSAs, K&S poured one 50-lb bag of steel shot and two graphite/steel shot mix into the HSAs, and pushed down on the 4" black iron pipe with the rig's auger drive cap to push out the wooden plug in the HSA bit. Mix = 3 50-lb bags of SWS Earth Contact Backfill + 1 50-lb bag of iron shot.
- K&S continued POH with HSAs while pouring graphite/steel shot mix into HSAs (keeping mix at least five feet inside HSAs until last flight POH). Required 10 mixes to bring graphite/iron shot to 2 feet bgs.
- TRS pushed a drip tube (a 4.5 foot long 0.5-inch diameter copper pipe with a piece of screen material clamped onto the bottom) in the borehole adjacent to the black iron electrode leaving 0.5 feet of the pipe above ground surface (ags) then dumped 1 1/2 50-lb



bags of #4 silica sand in the annulus to fill from 2 feet bgs to 1 foot bgs.

- David measured the stickup and WL. Stickup = 0.90' ags WL = 27.23' bgs

#### **Installation of ERH MPE electrode J4 (incomplete)**

- K&S used their D-120 truck-mounted drilling rig to advance a pilot hole with 12.25" diameter HSAs with center plug on 3-inch AW rod to 5 feet bgs. K&S POH with the HSA and center plug, installed a wooden plug in the bit, and drilled to 39.5 feet bgs charging the HSAs with water between flight connections after reaching 25 feet bgs.

- Lithology & PID Readings:

<u>DEPTH</u> <u>(ft bgs)</u>	<u>PID</u> <u>(ppm)</u>	<u>LITHOLOGY</u>
0 - 0.5	0.0	Gravely SAND, lt to mod yel brn, f-m grn, gravel is limerock, dry, no odor
0.5 - 4.5	0.0	Gravely SAND, dk brn gry grading to dk brn, f-m grn, dry, no odor
4.5 - 6	34.1 - 71.3	Silty SAND, blk to dusky brn, f-grn, sli clayey, dry to sli moist, stained, sli to mod odor
6 - 8	43.7	Silty SAND, bluish blk, f-grn, oily, stained, sli moist to moist, mod odor
8 - 12	53 - 98	Silty SAND, dk gry to bluish gry, f-m grn, stained, dry to sli moist, mod to strong odor
12 - 18	210 - 256	SAND, med to dk gry, f-grn, dry to sli moist, stained, strong odor
18 - 27	248	SAND, lt to mod brn gry getting lighter and browner in color w/ depth, f-grn, dry, strong odor
27 - 32	278 - 231	SAND, med gry mottled w/ dk gry, f-grn, staining, moist becoming wet w/ depth, strong odor
32 - 37	198 - 153	SAND, med to dk gry, f-m grn w/ few c-grn, some staining, wet, strong odor
37 - 39.5	185 - 105	SAND, dk gry grading to med to dk brn gry, f-m grn w/ few to some c-grn (coarsening w/ depth), some, wet, strong to mod odor

- K&S lowered 4-inch diameter black iron Sch 40 pipe with capped end inside the HSAs. Pipe consists of one 21-foot long joint with vertical 40-slot and one 18.5-foot joint only slotted in bottom 13.5 feet. TRS applied conductive paste on threads of pipe prior to making the connection. Top of slotted interval ~3 feet bgs.
- Before beginning to POH with the HSAs, K&S poured one 50-lb bag of steel shot and two graphite/steel shot mix into the HSAs and pushed down on the 4" black iron pipe with the rig's auger drive cap to push out the wooden plug in the HSA bit.
- K&S continued POH with HSAs while pouring graphite/steel shot mix into HSAs (keeping mix at least five feet inside HSAs until last flight POH). Required 10.5 mixes to bring graphite/iron shot to 2 feet bgs.
- TRS pushed a drip tube in the borehole adjacent to the black iron electrode leaving 0.5 feet of the pipe ags then dumped 1.75 bags of #4 silica sand in the annulus to fill from 2 feet bgs to 1 foot bgs.
- David measured the stickup and WL. Stickup = 0.86' ags WL = 26.98' bgs

#### **Installation of ERH MPE electrode J5 (incomplete)**

- K&S used their D-120 truck-mounted drilling rig to advance a pilot hole with 12.25" diameter HSA with center plug on 3-inch AW rod to 5 feet bgs. K&S POH with the

HSA and center plug, installed a wooden plug in the bit, and drilled to 24.5 feet bgs before shutting down for the night (SDFN).

- Lithology & PID Readings:

<u>DEPTH</u> <u>(ft bgs)</u>	<u>PID</u> <u>(ppm)</u>	<u>LITHOLOGY</u>
0 - 0.5	0.0	Gravely SAND, yel brn, f-m grn, gravel is f-m sized limerock, dry, no odor
0.5 - 4.5	0.0 - 8.1	LIMEROCK GRAVEL - backfill, dry, tr to sli odor
4.5 - 8	75 - 104	Gravely SAND, dk brn, f-c grn, gravel and some c-grn are limerock, dry, sli to mod odor
8 - 9	226	Silty SAND, dk brn to blackish brn, f-grn, sli clayey, dry to sli moist, strong odor
9 - 11	314	Silty SAND, bluish blk, f-grn, oily, stained, sli moist, strong odor
11 - 17	298 - 262	SAND, dk brn gry, f-grn, sli moist, stained, strong odor
17 - 22	218	SAND, med to lt gry brn lighter w/ depth, f-grn, dry, strong odor
22 - 24.5	156	SAND, lt yel brn to lt gry brn, f-grn, dry, mod to strong odor

- K&S ceased advancing 12.25" diameter HSAs @ 24.5 feet bgs because they would not be able to complete the installation of the electrode within their 8-hour work day. SDFN.

#### **Additional Notes and Observations:**

- TRS conducted a Health & Safety tailgate meeting in the morning with K&S and CDM Smith personnel.
- Brad collected soil samples from the soil cuttings roll offs to send to an offsite laboratory to verify disposal options.
- David measured the stickup and WL of MPE-J3. Stickup = 0.78' ags WL = 26.94' bgs

#### **Verbal Communications between CDM Smith and TRS Regarding Concerns or Deficiencies:**

- None.

#### **Potential Work Tomorrow:**

- K&S will complete the installation of MPE electrodes in Zone 2 (unpaved area west of the building) and begin advancing HSAs at one of the proposed locations for a MPE electrode in Zone 3.



# DAILY ACTIVITY REPORT

**Date:** 7/22/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site  
Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** 71°F, ptly cloudy, wind is calm. Heavy rainfall overnight (~4"). Forecast is for clear skies and the temperature to go into the mid 90s and there is a heat warning for the afternoon.

**Report Author:** David Rojas (CDM Smith)

**Personnel/visitors onsite:**

**CDM Smith:** David Rojas

**TRS:** Brad Morris

**K&S Engineers, Inc. (K&S):** Eric DeWitt & Carlos Santana

**Visitors:** None

**Work Performed Today Onsite by TRS and Contractors for TRS:**

**Installation of ERH Multi-phase Extraction (MPE) electrode J5 (incomplete)**

- K&S used their Diedrich-120 (D-120) truck-mounted drilling rig to resumed advancing 12.25" diameter hollow stem augers (HSAs) with a wooden plug in the bit, drilling to 39.5 feet below ground surface (bgs). K&S had already drilled to 24.5 feet bgs on 7/21/16. K&S charged the HSAs with water between flight connections.
- Lithology & Photoionization Detector (PID) Readings:

DEPTH (ft bgs)	PID (ppm)	LITHOLOGY
22 - 28	156 - 112	SAND, lt brn to lt gry brn, f-grn, dry to sli moist, mod to strong odor
28 - 32	159 - 189	SAND, mod to dk gry brn getting darker with depth, f-grn, staining, moist becoming wet, mod to strong odor.
32 - 35	171 - 112	SAND, dk grn gry, f-m grn w/few c-grn, wet, stained, strong odor
35 - 39.5	107	SAND, mod yel brn mottled w/mod to dk gry brn, f-m grn w/ few to some c-grn (coarser w/depth, wet, spotty staining, mod odor
- K&S lowered 4-inch diameter black iron Sch 40 pipe with capped end inside the HSAs. Pipe consists of one 21-foot long joint with vertical 40-slot and one 18.5-foot joint only slotted in bottom 13.5 feet. TRS applied conductive paste on threads of pipe prior to making the connection. Top of slotted interval ~3 feet bgs.
- Before beginning to pull out of the hole (POH) with the HSAs, K&S poured one 50-lb bag of steel shot and two graphite/steel shot mix into the HSAs, and pushed down on the 4" black iron pipe with the rig's auger drive cap to push out the wooden plug in the HSA bit. Mix = 3 50-lb bags of SWS Earth Contact Backfill + 1 50-lb bag of iron shot.
- K&S continued POH with HSAs while pouring graphite/steel shot mix into HSAs (keeping mix at least five feet inside HSAs until last flight POH). Required 9.5 mixes to bring graphite/iron shot to 2 feet bgs.

- TRS pushed a drip tube (a 4.5 foot long 0.5-inch diameter copper pipe with a piece of screen material clamped onto the bottom) in the borehole adjacent to the black iron electrode leaving 0.5 feet of the pipe above ground surface (ags) then dumped 1 50-lb bag of #4 silica sand in the annulus to fill from 2 feet bgs to 1 foot bgs.
- David measured the stickup and WL. Stickup = 1.06' ags WL = 27.08' bgs

#### **Installation of ERH MPE electrode H6 (incomplete)**

- K&S used their D-120 truck-mounted drilling rig to advance a pilot hole with 12.25" diameter HSAs with center plug on 3-inch AW rod to 5 feet bgs. K&S POH with the HSA and center plug, installed a wooden plug in the bit, and drilled to 39.5 feet bgs charging the HSAs with water between flight connections after reaching 25 feet bgs.
- Lithology & PID Readings:  

DEPTH (ft bgs)	PID (ppm)	LITHOLOGY
0 - 0.1	Not Meas.	Asphalt
0.1 - 0.5	0.9	Gravely SAND, med to dk org brn, f-c grn, dry, tr odor
0.5 - 2.0	0.2	Silty SAND, dk brn, f-m grn w/tr c-grn, sli clayey, dry, no odor
2.0 - 3.5	0.0	Silty SAND, dk red brn grading to mod red brn, f-grn, dry no odor
3.5 - 5	0.0	SAND, mod org brn, f-m grn w/few c-grn, sli silty, dry, no odor
5 - 16	0.0 - 0.4	SAND, mod yel brn becoming mottled w/mod gry brn w/depth, f-grn, dry, no odor
16 - 27	0.7 -3.1	SAND, lt to mod org yel brn, f-grn, dry, no odor
27 - 31	4.8 - 28	SAND, mod gry org brn, f-grn, spotty staining, moist becoming wet w/depth, sli to mod odor
31 - 36	39 - 59	SAND, grn yel gry brn, f-m grn w/tr c-grn but coarsening w/depth, some staining, wet, mod to strong odor
36 - 39.5	86 - 218	SAND, mod grn gry, f-m grn w/few to some c-grn (coarsening w/depth), stained, wet, strong odor
- K&S lowered 4-inch diameter black iron Sch 40 pipe with capped end inside the HSAs. Pipe consists of one 21-foot long joint with vertical 40-slot and one 18.5-foot joint only slotted in bottom 13.5 feet. TRS applied conductive paste on threads of pipe prior to making the connection. Top of slotted interval ~3.5 feet bgs.
- Before beginning to POH with the HSAs, K&S poured one 50-lb bag of steel shot and two graphite/steel shot mix into the HSAs and pushed down on the 4" black iron pipe with the rig's auger drive cap to push out the wooden plug in the HSA bit.
- K&S continued POH with HSAs while pouring graphite/steel shot mix into HSAs (keeping mix at least five feet inside HSAs until reaching the prescribed level of 23' bgs). Required 4.5 mixes to bring graphite/iron shot to 23 feet bgs. K&S continued POH with HSAs while pouring #4 silica sand into HSAs (keeping sand at least eight feet inside HSAs until POH w/HSAs. Required 29.5 50-lb bags of sand to bring it to 1 foot bgs.
- David measured the stickup and WL. Stickup = 0.57' ags WL = 27.35' bgs

#### **Additional Notes and Observations:**

- TRS conducted a Health & Safety tailgate meeting in the morning with K&S and CDM Smith personnel.
- TRS pushed a drip tube in the borehole adjacent to the black iron electrode of MPE-H6 leaving 0.5 feet of the pipe ags. David informed Brad that the figure showing the proposed construction of MPEs in Zone 3 do not show the need for a drip tube, but Brad said he thought it was decided that drip tubes would be placed in all MPEs. He will find



out over the weekend and it can be pulled out next week if not needed.

**Verbal Communications between CDM Smith and TRS Regarding Concerns or Deficiencies:**

- TRS and K&S personnel are scheduled to start work on Monday 7/25/16 at 09:00 AM.
- Brad is still trying to determine if K&S personnel can work more than 8-hours in a particular day without being considered “overtime” if they limit their working hours onsite to no more than 40-hrs per week.

**Potential Work Next Week:**

- K&S will bring the correct sized HSA’s (4.25-inch ID) for installing Temperature Monitoring Points (TMPs), Vapor Piezometers (VPs) & Groundwater Monitoring Piezometers (GMPs) when they return to the site next week. They will also continue the installation of MPE electrodes in Zone 3.

# DAILY ACTIVITY REPORT

**Date:** 7/25/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site  
Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** 80°F, clear, wind is calm. Forecast is for mostly sunny skies and the temperature to go into the mid 80s.

**Report Author:** John Grabs (CDM Smith)

## Personnel/visitors onsite:

**CDM Smith:** John Grabs

**TRS:** Brad Morris & Ted Highely

**K&S Engineers, Inc. (K&S):** Eric DeWitt & Carlos Santana

## Work Performed Today Onsite by TRS and Contractors for TRS:

### Installation of ERH Multi-phase Extraction (MPE) electrode J6

- K&S used their Diedrich-120 (D-120) truck-mounted drilling rig to advance a pilot hole with 12.25" diameter HSAs with center plug on 3-inch AW rod to 5 feet bgs. K&S POH with the HSA and center plug, installed a wooden plug in the bit, drilling to 39.5 feet below ground surface (bgs). After reaching 25 feet bgs, K&S charged the HSAs with water between flight connections.
- Lithology & Photoionization Detector (PID) Readings:

DEPTH (ft bgs)	PID (ppm)	LITHOLOGY
0.0 – 5.0	Not meas	Asphalt and gravely Silty SAND fill, blk to dk gry, f-m w/tr c grn, sli clayey, dry, sli to mod odor
5.0 – 26.0	NAB	SAND, mod yel brn mottled w/ dk yel brn, f- to med grn, dry, no odor, slight variations in color and grain size, but generally the same.
26 – 27	27.7	SAND, lt to mod yel brn getting grayer with depth, med-grn, damp to wet, odor.
27 – 39.5	289	SAND, med to dk grn gray, f-m grn w/ some c-grn (coarser w/ depth), wet, staining, strong to mod odor
- K&S lowered 4-inch diameter black iron Sch 40 pipe with capped inside the HSAs. Pipe consists of one 21-foot long joint with vertical 40-slot and one 18.5-foot joint only slotted in bottom 13.5 feet. TRS applied conductive paste on threads of pipe prior to making the connection. Top of slotted interval ~3.5 feet bgs.
- Before beginning to pull out of the hole (POH) with the HSAs, K&S poured one 50-lb bag of steel shot and two graphite/ steel shot mix into the HSAs, and pushed down on the 4" black iron pipe with the rig's auger drive cap to push out the wooden plug in the HSA bit. Mix = 3 50-lb bags of SWS Earth Contact Backfill + 1 50-lb bag of iron shot.
- K&S continued POH with HSAs while pouring graphite/ steel shot mix into HSAs (keeping mix at least five feet inside HSAs until reaching the prescribed level of 23' bgs). Required 4.5 mixes to bring graphite/ iron shot to 23 feet bgs. K&S continued POH with HSAs while pouring #4



silica sand into HSAs (keeping sand at least eight feet inside HSAs until POH w/HSAs. Required 26.75 50-lb bags of sand to bring it to 1 foot bgs.

- Trip tube inserted

#### **Installation of ERH MPE electrode H5**

- K&S used their D-120 truck-mounted drilling rig to advance a pilot hole with 12.25" diameter HSAs with center plug on 3-inch AW rod to 5 feet bgs. K&S POH with the HSA and center plug, installed a wooden plug in the bit, and drilled to 39.5 feet bgs charging the HSAs with water between flight connections after reaching 25 feet bgs.
- Lithology & PID Readings:

<u>DEPTH</u> <u>(ft bgs)</u>	<u>PID</u> <u>(ppm)</u>	<u>LITHOLOGY</u>
0.0 – 4.5	0.2	Asphalt and gravelly SAND fill, dk brn to blk, f-m grn w/few c-grn limerock and quartz, dry, no odor
4.5 – 5.0	0.2	Silty SAND, med brown, f-grn, dry, loose, no odor
5.0 – 26.5	0.1	SAND, lt to dk yel brn, f- to med-grn, dry sli odor
26.5-29.5	1.2	Silty SAND, lt grayish brn, med-grn, damp, odor
29.5-39.5	146-224	SAND, med-grn, lt grayish, med-grn, wet, sheen in lower portion, strong odor
- K&S lowered 4-inch diameter black iron Sch 40 pipe with capped end inside the HSAs. Pipe consists of one 21-foot long joint with vertical 40-slot and one 18.5-foot joint only slotted in bottom 13.5 feet. TRS applied conductive paste on threads of pipe prior to making the connection. Top of slotted interval ~3.5 feet bgs.
- Before beginning to POH with the HSAs, K&S poured one 50-lb bag of steel shot and two graphite/steel shot mix into the HSAs and pushed down on the 4" black iron pipe with the rig's auger drive cap to push out the wooden plug in the HSA bit.
- K&S continued POH with HSAs while pouring graphite/steel shot mix into HSAs (keeping mix at least five feet inside HSAs until reaching the prescribed level of 23' bgs). Required 4.5 mixes to bring graphite/iron shot to 23 feet bgs. K&S continued POH with HSAs while pouring #4 silica sand into HSAs (keeping sand at least five feet inside HSAs until POH w/HSAs. Required 28 50-lb bags of sand to bring it to 1 foot bgs.
- Trip tube inserted.

#### **Additional Notes and Observations:**

- All Zone 3 MPE electrodes will be constructed in the same manner as described above.
- TRS conducted a Health & Safety tailgate meeting in the morning with K&S and CDM Smith personnel.

#### **Verbal Communications between CDM Smith and TRS Regarding Concerns or Deficiencies:**

- Brad spoke with K&S management personnel and determined that K&S personnel can work more than 8-hours in a particular day without being considered "overtime" as long as they limit their working hours onsite to no more than 40-hrs per week.

#### **Potential Work Tomorrow:**

- K&S will continue installation of MPE electrodes along the H line (i.e., H-4 through H-2).

# DAILY ACTIVITY REPORT

**Date:** 7/26/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site  
Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** 78°F, clear, wind is calm. Forecast is for clear skies and the temperature to go into the mid 80s.

**Report Author:** David Rojas (CDM Smith)

**Personnel/visitors onsite:**

**CDM Smith:** David Rojas & John Grabs

**TRS:** Brad Morris & Ted Highely

**K&S Engineers, Inc. (K&S):** Eric DeWitt & Carlos Santana

**Visitors:** Brian Conrath (IEPA)

**Work Performed Today Onsite by TRS and Contractors for TRS:**

**Installation of ERH Multi-phase Extraction (MPE) electrode H4 (incomplete)**

- K&S used their Diedrich-120 (D-120) truck-mounted drilling rig to advance a pilot hole with 12.25" diameter HSAs with center plug on 3-inch AW rod to 5 feet bgs. K&S POH with the HSA and center plug, installed a wooden plug in the bit, drilling to 39.5 feet below ground surface (bgs). After reaching 25 feet bgs, K&S charged the HSAs with water between flight connections.

- Lithology & Photoionization Detector (PID) Readings:

DEPTH (ft bgs)	PID (ppm)	LITHOLOGY
0 - 0.1	Not Meas.	Asphalt
0.1 - 2.0	39 - 108	Gravely Silty SAND, blk to dk gry, f-m w/tr c grn, sli clayey, dry, sli to mod odor
2.0 - 3.0	51 - 41	Silty SAND, dk dusky brn, f-grn w/tr m&c, sli clayey, tr to few gravel, dry, sli odor
3.0 - 4.5	35 - 21	Silty SAND, dk brn, f-m grn w/some c-grn, few to some gravel, dry, sli odor
4.5 - 6.0	10.5 - 8	SAND, med org brn, f-grn, dry, tr to no odor
6.0 - 9.0	7.6	SAND, dk org brn mottled w/dk dusky brn, f-grn w/tr m-c grn, dry, tr to no odor
9.0 - 12	3.4	SAND, mod yel brn mottled w/dk yel brn, f-grn, dry, no odor
12 - 27	1.5 - 0.4	SAND, lt to mod yel brn getting lighter with depth, f-grn, dry, no odor.
27 - 34	28.1 - 39	SAND, lt yel brn, f-grn, sli moist becoming wet below ~29' bgs, sli odor.
34 - 37	44 - 77	SAND, med grn brn becoming darker in color w/depth, f-m grn w/tr c-grn, wet, spotty staining incr. w/depth, mod. odor



37 - 39.5 156 - 66.7 SAND, med to dk grn gray, f-m grn w/some c-grn (coarser w/depth), wet, staining, strong to mod odor, sli less staining & PID w/depth

- K&S lowered 4-inch diameter black iron Sch 40 pipe with capped inside the HSAs. Pipe consists of one 21-foot long joint with vertical 40-slot and one 18.5-foot joint only slotted in bottom 13.5 feet. TRS applied conductive paste on threads of pipe prior to making the connection. Top of slotted interval ~3.5 feet bgs.
- Before beginning to pull out of the hole (POH) with the HSAs, K&S poured one 50-lb bag of steel shot and two graphite/steel shot mix into the HSAs, and pushed down on the 4" black iron pipe with the rig's auger drive cap to push out the wooden plug in the HSA bit. Mix = 3 50-lb bags of SWS Earth Contact Backfill + 1 50-lb bag of iron shot.
- K&S continued POH with HSAs while pouring graphite/steel shot mix into HSAs (keeping mix at least five feet inside HSAs until reaching the prescribed level of 23' bgs). Required 4.5 mixes to bring graphite/iron shot to 23 feet bgs. K&S continued POH with HSAs while pouring #4 silica sand into HSAs (keeping sand at least eight feet inside HSAs until POH w/HSAs. Required 26.75 50-lb bags of sand to bring it to 1 foot bgs.
- David measured the stickup and WL. Stickup = 0.60' ags WL = 26.48' bgs

#### Installation of ERH MPE electrode H3 (incomplete)

- K&S used their D-120 truck-mounted drilling rig to advance a pilot hole with 12.25" diameter HSAs with center plug on 3-inch AW rod to 5 feet bgs. K&S POH with the HSA and center plug, installed a wooden plug in the bit, and drilled to 39.5 feet bgs charging the HSAs with water between flight connections after reaching 25 feet bgs.
- Lithology & PID Readings:  

DEPTH (ft bgs)	PID (ppm)	LITHOLOGY
0 - 0.1	Not Meas.	Asphalt
0.1 - 2.5	45 - 58	Gravelly SAND, dk brn to blk, f-m grn w/few c-grn, gravel is limerock and quartz, dry, sli to mod odor
2.5 - 4.0	32 - 20	Silty SAND, med org brn mottled w/dk brn, f-grn, dry, sli odor
4.0 - 7	27.6	SAND, dk yel brn, f-grn, dry sli odor
7 - 27	6.7 - 0.4	SAND, lt to mod yel brn, f-grn, dry, tr to no odor
27 - 33	21 - 44	SAND, mod yel brn to mod grn brn, f-grn, spotty staining, sli moist becoming wet below ~29' bgs, sli to mod odor
33 - 39.5	64 - 94 - 23	SAND, mod grn brn, f-m grn w/tr to few c-grn (coarsening w/depth), stained, wet, mod to strong odor. Highest PID from ~38' bgs; lowest PID from ~39' bgs
- K&S lowered 4-inch diameter black iron Sch 40 pipe with capped end inside the HSAs. Pipe consists of one 21-foot long joint with vertical 40-slot and one 18.5-foot joint only slotted in bottom 13.5 feet. TRS applied conductive paste on threads of pipe prior to making the connection. Top of slotted interval ~3.5 feet bgs.
- Before beginning to POH with the HSAs, K&S poured one 50-lb bag of steel shot and two graphite/steel shot mix into the HSAs and pushed down on the 4" black iron pipe with the rig's auger drive cap to push out the wooden plug in the HSA bit.
- K&S continued POH with HSAs while pouring graphite/steel shot mix into HSAs (keeping mix at least five feet inside HSAs until reaching the prescribed level of 23' bgs). Required 4.5 mixes to bring graphite/iron shot to 23 feet bgs. K&S continued POH with HSAs while pouring #4 silica sand into HSAs (keeping sand at least five feet inside HSAs until POH w/HSAs. Required 28 50-lb bags of sand to bring it to 1 foot bgs.
- David measured the stickup and WL. Stickup = 0.74' ags WL = 26.60' bgs

### **Installation of ERH MPE electrode H2 (incomplete)**

- K&S used their D-120 truck-mounted drilling rig to advance a pilot hole with 12.25" diameter HSA with center plug on 3-inch AW rod to 5 feet bgs. K&S POH with the HSA and center plug and found that they had hit a buried steel drum. After the remains of the drum were removed, K&S installed a wooden plug in the bit, and drilled to 10 feet bgs. Upon reaching this depth, it was determined that the wooden plug had been pushed up into the HSAs, so they were POH, the wooden plug removed, and a new plug installed. The borehole was then advanced to 24.5 feet bgs before SDFN.
- Lithology & PID Readings:

<u>DEPTH</u> <u>(ft bgs)</u>	<u>PID</u> <u>(ppm)</u>	<u>LITHOLOGY</u>
0 – 0.1	Not Meas.	Asphalt
0.1 – 3.5	3.5	Gravely SAND, mod to dk yel brn, f-m grn, dry, no odor
3.5 – 11	1.1 – 0.2	SAND, mod org brn mottled w/dk yel brn, f-grn, tr gravel, sli moist, dry, no odor
11 – 24.5	0.2 – 1.8	SAND, lt yel brn, f-grn, dry, no odor
- K&S ceased advancing 12.25" diameter HSAs @ 24.5 feet bgs because they would not be able to complete the installation of the electrode within their 8-hour work day. SDFN.

### **Additional Notes and Observations:**

- TRS conducted a Health & Safety tailgate meeting in the morning with K&S and CDM Smith personnel.
- TRS pushed a drip tube in the borehole adjacent to the black iron electrode of MPE-H6 leaving 0.5 feet of the pipe ags. David informed Brad that the figure showing the proposed construction of MPEs in Zone 3 do not show the need for a drip tube, but Brad said he thought it was decided that drip tubes would be placed in all MPEs. He will find out over the weekend and it can be pulled out next week if not needed.
- David measured the stickup and WL of MPE-J6. Stickup = 0.73' ags WL = 26.85' bgs
- David measured the stickup and WL of MPE-H5. Stickup = 0.46' ags WL = 26.83' bgs

### **Verbal Communications between CDM Smith and TRS Regarding Concerns or Deficiencies:**

- Brad stated that TRS is installing drip tubes in the annulus of each of the MPE electrodes in Zone 3 even though the proposed construction figures don't call for them. They are doing this so a means to provide hydration is available just in case hydrating is determined to be necessary for these electrodes to enhance the remediation process.
- Brad spoke with K&S management personnel and determined that K&S personnel can work more than 8-hours in a particular day without being considered "overtime" as long as they limit their working hours onsite to no more than 40-hrs per week.

### **Potential Work Tomorrow:**

- K&S will complete the installation of MPE-H2 then use the 4.25-inch ID HSAs to install Temperature Monitoring Points (TMPs), Vapor Piezometers (VPs) & Groundwater Monitoring Piezometers (GMPs) in Zone 2 and the eastern portion of Zone 3. They will then continue the installation of MPE electrodes in Zone 3.



# DAILY ACTIVITY REPORT

**Date:** 7/27/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site  
Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** 71 degrees, clear, wind is calm. Forecast is for clear skies and the temperature to go into the mid to upper 80s.

**Report Author:** David Rojas (CDM Smith)

**Personnel/visitors onsite:**

**CDM Smith:** David Rojas

**TRS:** Brad Morris

**K&S Engineers, Inc. (K&S):** Eric DeWitt & Carlos Santana

**Visitors:** Bret Baker (Bodine)

**Work Performed Today Onsite by TRS and Contractors for TRS:**

**Installation of ERH Multi-phase Extraction (MPE) electrode H2 (incomplete)**

- K&S used their Diedrich-120 (D-120) truck-mounted drilling rig to resumed advancing 12.25" diameter hollow stem augers (HSAs) with a wooden plug in the bit, drilling to 39.5 feet below ground surface (bgs). K&S had already drilled to 24.5 feet bgs on 7/26/16. K&S charged the HSAs with water between flight connections.
- Lithology & Photoionization Detector (PID) Readings:

DEPTH (ft bgs)	PID (ppm)	LITHOLOGY
24.5 - 31	10.3 - 0.4	SAND, lt to mod yel brn, f-grn w/few m-grn w/depth, dry becoming moist @ 26' bgs and wet below ~30' bgs, tr to sli odor.
31 - 39.5	3.1 - 4.6	SAND, mod yel brn grading to grayish yel brn, f-m grn w/ tr c-grn, wet, sli odor
- K&S lowered 4-inch diameter black iron Sch 40 pipe with capped end inside the HSAs. Pipe consists of one 21-foot long joint with vertical 40-slot and one 18.5-foot joint only slotted in bottom 13.5 feet. TRS applied conductive paste on threads of pipe prior to making the connection. Top of slotted interval ~3 feet bgs.
- Before beginning to pull out of the hole (POH) with the HSAs, K&S poured one 50-lb bag of steel shot and two graphite/steel shot mix into the HSAs, and pushed down on the 4" black iron pipe with the rig's auger drive cap to push out the wooden plug in the HSA bit. Mix = 3 50-lb bags of SWS Earth Contact Backfill + 1 50-lb bag of iron shot.
- K&S continued POH with HSAs while pouring graphite/steel shot mix into HSAs (keeping mix at least five feet inside HSAs until reaching the prescribed level of 23' bgs). Required 4.5 mixes to bring graphite/iron shot to 23 feet bgs. K&S continued POH with HSAs while pouring #4 silica sand into HSAs (keeping sand at least eight feet inside HSAs until POH w/HSAs. Required 35 50-lb bags of sand to bring it to 1 foot bgs.
- TRS pushed a drip tube in the borehole adjacent to the electrode leaving 0.5 feet of the

pipe ags.

- David measured the stickup and WL. Stickup = 0.91' ags WL = 26.63' bgs

#### **Installation of ERH Temperature Monitoring Point (TMP)-K5 (incomplete)**

- K&S used their D-120 truck-mounted drilling rig to advance a pilot hole with 4.25" inside diameter (ID) HSAs (which create a 7.88" diameter hole) with center plug on 1.75-inch AWJ rod to 5 feet bgs. K&S POH with the HSA and center plug, installed a wooden plug in the bit, and drilled to 39 feet bgs charging the HSAs with water between flight connections after reaching 25 feet bgs.
- K&S lowered open-ended 1.75-inch AWJ rods in the HSAs and tagged sand @ ~30 feet bgs (not sure if sand came in through HSA joints or if the wooden plug failed). K&S jetted the HSAs with water through the rods and washed sand out of HSAs. Used rods to push plug out of the HSAs then pulled out of the augers (POA) with rods. K&S and TRS personnel lowered two 20-foot sections of 1.25" diameter copper pipe in the HSAs, soldering the coupler between the two sections.
- Before beginning to POH with the HSAs, K&S filled HSAs with neat cement grout.
- K&S continued POH with HSAs while pouring more grout into HSAs (keeping the downhole HSAs full of grout until last flight POH). Required 17 94-lb bags of Type I Portland cement to bring grout to 2 feet bgs. The top of the copper pipe is 1.15' ags.
- Later, K&S brought grout in the annulus to ~0.5 feet bgs.

#### **Installation of ERH Vapor Piezometer (VP)-K5 (incomplete)**

- K&S used their D-120 truck-mounted drilling rig to advance a pilot hole with 4.25" ID HSAs (which create a 7.88" diameter hole) with center plug on 1.75-inch AWJ rods to 13 feet bgs. K&S then pulled out of the augers (POA) with rods and center plug. TRS personnel lowered the pre-assembled 14-foot long VP in the HSAs which consisted of 2.5' of 1.5" diameter stainless-steel (SS) wire-wrapped screen, 5.75' of 1.5" diameter SS riser, and 5.75' of 1.5" diameter CPVC pipe.
- Before beginning to POH with the HSAs, K&S dumped ½ of a 50-lb bag of #4 silica sand in the HSAs. As K&S began POH with the HSAs, the VP became wedged in the HSAs (due to bridging with the sand pack material). K&S POH with the HSAs and VP, but the borehole remained open to 13' bgs, so the VP was lowered in the borehole with the screen from 10.5' to 13.0' bgs and 3.5 50-lb bags of #4 sand were dumped into the annulus to bring the top of the sandpack to 8.0' bgs.
- K&S poured grout into the annulus, filling the remainder of the annulus. Required 5 94-lb bags of Type I Portland cement to bring grout to surface.

#### **Installation of ERH Temperature Monitoring Point (TMP)-K4 (incomplete)**

- K&S used their D-120 truck-mounted drilling rig to advance a pilot hole with 4.25" ID HSAs (which create a 7.88" diameter hole) with center plug on 1.75-inch AWJ rod to 5 feet bgs. K&S POH with the HSA and center plug, installed a wooden plug in the bit, and drilled to 24.5 feet bgs with the HSAs. K&S ceased advancing the HSAs @ 24.5 feet bgs because they would not be able to complete the installation of the electrode within the scheduled 10-hour work day. Also, Brad needs to deliver the soil samples that he collected today from the rollofs to FedEx. SDFN.

#### **Additional Notes and Observations:**

- TRS conducted a Health & Safety tailgate meeting in the morning with K&S and CDM Smith personnel.



- Brad re-collected soil samples from the soil cuttings roll offs to send to an offsite laboratory to verify disposal options. The samples had to be re-collected because the previous samples collected had exceeded holding times as a result of shipping problems.
- Rockford Utilities (RU) have closed Marshall Street west of the site to perform utility work (tie into water main, locate supply valve to site bldg.. & cap the fire suppression line to the site bldg.). Bret Baker (Bodine) showed RU personnel where the Groundwater Extraction System (GWES) piping was located under Marshall St. and in the right-of-way (ROW) west of the roadway. RU personnel requested a drawing showing the GWES piping and Bret stated that Bodine would provide it.

**Verbal Communications between CDM Smith and TRS Regarding Concerns or Deficiencies:**

- None.

**Potential Work Tomorrow:**

- K&S will complete the installation of TMP-K4 and then install TMP-H3, groundwater piezometers (GWPs)-K3, GWP-H6, and move in and rig up (MIRU) on GWP-G5.

# DAILY ACTIVITY REPORT

**Date:** 7/28/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** 70 degrees, partly cloudy, wind is calm. Forecast is for potential afternoon showers or thundershowers and the temperature to go into the lower 80s.

**Report Author:** David Rojas (CDM Smith)

**Personnel/visitors onsite:**

**CDM Smith:** David Rojas

**TRS:** Brad Morris

**K&S Engineers, Inc. (K&S):** Eric DeWitt & Carlos Santana

**Visitors:** None

**Work Performed Today Onsite by TRS and Contractors for TRS:**

**Installation of ERH Temperature Monitoring Point (TMP)-K4 (incomplete)**

- K&S used their Diedrich-120 (D-120) truck-mounted drilling rig to resume advancing 4.25" inside diameter (ID) hollow stem augers (HSAs) with a wooden plug in the bit, drilling to 39 feet below ground surface (bgs). K&S had already drilled to 24.5 feet bgs on 7/27/16. K&S charged the HSAs with water between flight connections.
- K&S lowered open-ended 1.75-inch AWJ rods in the HSAs and push plug out of the HSAs then pulled out of the augers (POA) with rods. K&S and TRS personnel lowered two 20-foot sections of 1.25" diameter copper pipe in the HSAs, soldering the coupler between the two sections.
- Before beginning to POH with the HSAs, K&S filled HSAs with neat cement grout.
- K&S continued POH with HSAs while pouring more grout into HSAs (keeping the downhole HSAs full of grout until last flight POH). Required 20 94-lb bags of Type I Portland cement to bring grout to 1 feet bgs. The top of the copper pipe is 1.35' ags.
- Later, K&S brought grout in the annulus to ~0.5 feet bgs.

**Installation of ERH TMP-H3 (incomplete)**

- K&S used their D-120 truck-mounted drilling rig to advance a pilot hole with 4.25" ID HSAs (which create a 7.88" diameter hole) with center plug on 1.75-inch AWJ rod to 5 feet bgs. K&S POH with the HSA and center plug, installed a wooden plug in the bit, and drilled to 39 feet bgs charging the HSAs with water between flight connections after reaching 25 feet bgs.
- K&S lowered open-ended 1.75-inch AWJ rods in the HSAs and push plug out of the HSAs then pulled out of the augers (POA) with rods. K&S and TRS personnel lowered two 20-foot sections of 1.25" diameter copper pipe in the HSAs, soldering the coupler between the two sections.
- Before beginning to POH with the HSAs, K&S filled HSAs with neat cement grout.
- K&S continued POH with HSAs while pouring more grout into HSAs (keeping the



downhole HSAs full of grout until last flight POH). Required 16 94-lb bags of Type I Portland cement to bring grout to 1 feet bgs. The top of the copper pipe is 1.31' ags.

- Later, K&S brought grout in the annulus to ~0.5 feet bgs

#### **Installation of ERH Groundwater Piezometer (GWP)-K3 (incomplete)**

- K&S used their D-120 truck-mounted drilling rig to advance a pilot hole with 4.25" ID HSAs (which create a 7.88" diameter hole) with center plug on 1.75-inch AWJ rod to 5 feet bgs. K&S POH with the HSA and center plug, installed a wooden plug in the bit, and drilled to 24.5 feet bgs with the HSAs. K&S ceased advancing the HSAs @ 24.5 feet bgs because they would not be able to complete the installation of the GWP within the scheduled 10-hour work day. Secured the site and SDFN.

#### **Additional Notes and Observations:**

- TRS conducted a Health & Safety tailgate meeting in the morning with K&S and CDM Smith personnel.
- Inclement weather began occurring at 11:58 this morning as dark clouds approached and lightning was observed. The site was secured and all personnel took an hour lunch break. During lunch, heavy rainfall occurred and when personnel returned to the site, there was light rain (with periods of heavy rain), thunder, and lightning, so work did not resume until 14:25 when the thunder and lightning abated. Although there was still occasional periods of light rain and drizzle, thunder and lightning was not observed for 30 minutes, so K&S resumed drilling activities.

#### **Verbal Communications between CDM Smith and TRS Regarding Concerns or Deficiencies:**

- David and Brad discussed proposed short-term and long-term schedule for drilling. Both of us are concerned about potential "bridging" problems if K&S attempts to install sandpack in 4.25" ID HSAs for the 2" diameter GWPs. TRS may ask K&S to bring 6.25" ID HSAs with them next week and use them to install the GWPs, but Brad wants to try to install one of the GWPs this week to see if it can be done with the 4.25" ID HSAs without a problem.
- David inquired with Brad regarding the proposed "adjustments" to be made regarding the proposed locations of the three "D" MPEs currently designed to be directly under the overhead electric (OE) lines. Brad spoke with K&S personnel and determined that K&S has a Direct Push Technology (DPT) rig [a Geoprobe 6610 model] and they would like to be able to bring it to the site next week and use it to install those MPEs because it will be required on another site the following week. There will not be a separate drilling crew, the 2-man drilling crew currently at the site will operate the rig.
- David reconnoitered the underground utility markings on Marshall Street and noticed that there are gas and sewer lines marked on the street pavement that are not shown on the TRS figures and some of the underground and overhead utilities are not correctly located on the TRS figures based on the markings (for underground utilities) and what was observed overhead (for overhead utilities). David related these observations to Brad.
- David inquired with Brad regarding the proposed schedule for surface installations. Brad stated that surface installation activities would likely begin sometime next week, but would likely only involve the assembly of electrode heads and other surface completion appurtenances by one or two people at times when they are not working with the K&S

personnel installing MPes, TPWs, VPs, or GWPs.

**Potential Work Tomorrow:**

- K&S will complete the installation of GWP-K3 and possibly move in and rig up (MIRU) on GWP-H6 and possibly advance HSAs to 24.5' bgs.



# DAILY ACTIVITY REPORT

**Date:** 7/29/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site  
Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** 69°F, cloudy, wind is 2-4 mph SW. Forecast is for cloudy skies and temperatures in the high 70s and there is a heat good chance for rain/thunderstorms in the afternoon.

**Report Author:** David Rojas (CDM Smith)

**Personnel/visitors onsite:**

**CDM Smith:** David Rojas

**TRS:** Brad Morris

**K&S Engineers, Inc. (K&S):** Eric DeWitt & Carlos Santana

**Visitors:** ComEd Representative

**Installation of ERH MPE electrode G5 (incomplete)**

- K&S used their Diedrich-120 (D-120) truck-mounted drilling rig to advance a pilot hole with 12.25" diameter hollow stem augers (HSAs) [which have an 8.25" inside diameter (ID)] with center plug on 3-inch AW rod to 5 feet below ground surface (bgs). K&S pulled out of the hole (POH) with the HSA and center plug, installed a wooden plug in the bit, and drilled to 39.5 feet bgs charging the HSAs with water between flight connections after reaching 25 feet bgs.
- Lithology & Photoionization Detector (PID) Readings:

<u>DEPTH</u> <u>(ft bgs)</u>	<u>PID</u> <u>(ppm)</u>	<u>LITHOLOGY</u>
0 - 0.1	Not Meas.	Asphalt
0.1 - 0.5	0.3	Gravely SAND, dk gry brn, f-m grn, dry, no odor
0.5 - 1.0	0.1	Gravely SAND, med brn mottled w/dk brn, f-grn, gravel is quartz and limerock, dry, no odor
1.0 - 2.5	0.1	Silty SAND, blk grading to dk dusky brn, f-grn, sli clayey, organics, tr gravel, dry, no odor
2.5 - 3.0	0.0	Gravely Silty SAND, med to dk brn, f-grn, gravel is subrounded quartz & limerock, dry, no odor
3.0 - 5.0	0.0	Silty SAND, med org brn grading to lt org brn w/depth, f-grn, dry, no odor
5.0 - 12	0.1 -0.5	Silty SAND, lt yel gry brn, f-grn, less silty w/depth, dry, no odor
12 - 25	0.0 - 2.8	SAND, lt yel brn becoming mottled w/yel gry brn w/depth, f-grn, dry to sli moist at depth, no odor
25 - 31	6.9 - 28	SAND, mod yel gry brn grading to brn gray with depth, f-grn w/tr m-grn, moist becoming wet below ~28' bgs, tr staining, sli to mod odor
31 - 39.5	43 - 238	SAND, grn brn gry, f-m grn w/few to some c-grn (coarsening w/depth), stained, wet, mod to strong odor

- K&S lowered 4-inch diameter black iron Sch 40 pipe with capped end inside the HSAs. Pipe consists of one 21-foot long joint with vertical 40-slot and one 18.5-foot joint only slotted in bottom 13.5 feet. TRS applied conductive paste on threads of pipe prior to making the connection. Top of slotted interval ~3.5 feet bgs.
- Before beginning to pull out of the hole (POH) with the HSAs, K&S poured one 50-lb bag of steel shot and two graphite/steel shot mix into the HSAs and pushed down on the 4" black iron pipe with the rig's auger drive cap to push out the wooden plug in the HSA bit.
- K&S continued POH with HSAs while pouring graphite/steel shot mix into HSAs (keeping mix at least five feet inside HSAs until reaching the prescribed level of 23' bgs). Required 4.5 mixes to bring graphite/iron shot to 23 feet bgs. K&S continued POH with HSAs while pouring #4 silica sand into HSAs (keeping sand at least eight feet inside HSAs until POH w/HSAs. Required 32 50-lb bags of sand to bring it to 1 foot bgs.
- TRS pushed a drip tube (a 4.5 foot long 0.5-inch diameter copper pipe with a piece of screen material clamped onto the bottom) in the borehole adjacent to the black iron electrode leaving ~1.0 feet of the pipe above ground surface (ags).
- David measured the stickup and water level (WL) of the 4" pipe: Stickup = 0.71' ags  
WL = 26.79' bgs

### **Additional Notes and Observations:**

- TRS conducted a Health & Safety tailgate meeting in the morning with K&S and CDM Smith personnel.
- Due to the problem with the threads of the stainless steel piping for the groundwater piezometers (GWPs) [see bullet in the section below for details], K&S moved the D-120 drill rig off the proposed GWP-K3 location leaving the 4.25" ID HSAs that had been advanced to 24.5' bgs on 7/28/16 in the ground.
- A representative from ComEd showed up at the site this morning. Brad and the ComEd representative discussed the electrical power supply needs that TRS will require for the ERH system.

### **Verbal Communications between CDM Smith and TRS Regarding Concerns or Deficiencies:**

- TRS and K&S personnel are scheduled to start work on Monday 8/1/16 at 09:00 AM.
- TRS attempted to pre-construct the stainless steel GWP materials in the staging area inside the site building last night before shutting down for the night (SDFN) and found that the threads of the stainless steel pipes are out of specification or not properly or fully machined resulting in an inability to fully thread couplers or caps to the pipe. The couplers and caps will easily thread on the threads of the manufactured screens, so it does not appear that the problem is with the threads of the couplers and caps. Brad suggested that TRS will likely have a local machine shop repair the pipe threads of the stainless steel pipes early next week. Until the stainless steel pipes can be repaired or replaced, TRS will have to postpone the installation of the GWPs.

### **Potential Work Next Week:**

- K&S will bring their track mounted Direct Push Technology (DPT) rig [a Geoprobe Model 6610] which will be used to install the MPE electrodes (MPE-D3, MPE-D4, and MPE-D5) that are proposed to be installed in close proximity to the overhead power lines on the



east side of Marshall Street. They will install the three “D” MPEs and continue to install MPEs, Temperature Monitoring Points (TMPs), and Vapor Piezometers (VPs) on the property in Zone 3 when they return to the site next week.

# DAILY ACTIVITY REPORT

**Date:** 8/1/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site  
Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** 71°F, clear to partly cloudy, wind is 1-3 mph ESE. Forecast is for clearing skies and the temperature to go into the mid 80s.

**Report Author:** David Rojas (CDM Smith)

**Personnel/visitors onsite:**

**CDM Smith:** David Rojas & John Grabs

**TRS:** Jeff Riffe & Ted Highely

**K&S Engineers, Inc. (K&S):** Eric DeWitt & Carlos Santana

**Visitors:** None

**Work Performed Today Onsite by TRS and Contractors for TRS:**

**Installation of ERH Multi-phase Extraction (MPE) electrode G4 (incomplete)**

- K&S used their Diedrich-120 (D-120) truck-mounted drilling rig to advance a pilot hole with 12.25" diameter HSAs with center plug on 3-inch AW rod to 5 feet bgs. K&S POH with the HSA and center plug, installed a wooden plug in the bit, drilling to 39.5 feet below ground surface (bgs). After reaching 25 feet bgs, K&S charged the HSAs with water between flight connections.

- Lithology & Photoionization Detector (PID) Readings:

DEPTH (ft bgs)	PID (ppm)	LITHOLOGY
0 - 0.1	Not Meas.	Asphalt
0.1 - 0.5	0.2	Gravelly SAND, dk gry brn, f-m, sli to mod silty, dry, no odor
0.5 - 1.0	0.3	Gravelly SAND, med brn mottled w/dk brn, f- grn, dry, no odor
1.0 - 4.0	0.1	Silty SAND, dk dusky brn grading to dk brn, f- grn, sli to mod clayey, dry, no odor
4.0 - 5.0	0.0	Silty SAND, med org brn, f-grn, dry, no odor
5.0 - 6.0	0.5	Silty SAND, lt to mod org brn, f-grn, dry, no odor
6.0 - 8.0	0.3	Silty SAND, med yel org brn, f-grn, dry, no odor
8.0 - 12	0.5	SAND, med gry brn, f-grn, dry, no odor
12 - 27	0.6 - 0.9	SAND, lt yel gry brn, f-grn, dry becoming moist @ 26' bgs, no odor
27 - 32	28.9 - 57	SAND, med gry brn, f-grn w/tr to few m-grn, moist becoming wet below ~30' bgs, sli to mod odor
32 - 36	83 - 128	SAND, med greenish gray brn, f-m grn w/tr to few c-grn, wet, staining, mod to strong odor
36 - 39.5	141 - 186	SAND, med grn gray, f-m grn w/few c-grn (coarser w/depth), wet, staining, strong odor



- K&S lowered 4-inch diameter black iron Sch 40 pipe with capped inside the HSAs. Pipe consists of one 21-foot long joint with vertical 40-slot and one 18.5-foot joint only slotted in bottom 13.5 feet. TRS applied conductive paste on threads of pipe prior to making the connection. Top of slotted interval ~3.5 feet bgs.
- Before beginning to pull out of the hole (POH) with the HSAs, K&S poured one 50-lb bag of steel shot and two graphite/steel shot mix into the HSAs, and pushed down on the 4" black iron pipe with the rig's auger drive cap to push out the wooden plug in the HSA bit. Mix = 3 50-lb bags of SWS Earth Contact Backfill + 1 50-lb bag of iron shot.
- K&S continued POH with HSAs while pouring graphite/steel shot mix into HSAs (keeping mix at least five feet inside HSAs until reaching the prescribed level of 23' bgs). Required 4.0 mixes to bring graphite/iron shot to 23 feet bgs. K&S continued POH with HSAs while pouring #4 silica sand into HSAs (keeping sand at least eight feet inside HSAs until POH w/HSAs. Required 32 50-lb bags of sand to bring it to 0.5 foot bgs.
- A drip tube (a 4-foot long ½" diameter copper pipe with a stainless steel screen clamped onto the bottom of it) was placed in the lead HSA just before it was POH so as the HSA was POH the drip tube settled in the borehole adjacent to the black iron electrode leaving ~1.0 foot of the copper pipe above ground surface (ags).
- David measured the stickup and WL of MPE-G4: Stickup = 0.62' ags WL = 26.46' bgs

#### **Installation of ERH MPE electrode G3 (incomplete)**

- K&S used their D-120 truck-mounted drilling rig to advance a pilot hole with 12.25" diameter HSA with center plug on 3-inch AW rod to 5 feet bgs. K&S POH with the HSA and center plug and installed a wooden plug in the bit, and drilled to 24.5 feet bgs before SDFN.
- Lithology & PID Readings:
 

<u>DEPTH</u> <u>(ft bgs)</u>	<u>PID</u> <u>(ppm)</u>	<u>LITHOLOGY</u>
0 - 0.1	Not Meas.	Asphalt
0.1 - 1.5	2.9	Gravely Silty SAND, blk to dk dusky brn, f-m grn, dry, sli odor
1.5 - 2.5	4.8	Gravely Clayey SAND, dk dusky brn, f-m grn, dry to sli moist, sli odor
2.5 - 3.5	1.9	Gravely Silty SAND, dk red brn, f-m grn, dry, no odor
3.5 - 6.0	2.5	Silty SAND, med to dk org brn, f-grn, dry, no odor
6.0 - 18	3.0 - 1.5	SAND, lt to mod yel brn, sli silty, becoming lighter in color and less silty with depth, f-grn, dry, no odor
18 - 24.5	0.1 - 0.6	SAND, lt yel brn, f-grn, dry becoming sli moist w/ depth, no odor
- K&S ceased advancing 12.25" diameter HSAs @ 24.5 feet bgs because they would not be able to complete the installation of the electrode within their 8-hour work day. SDFN.

#### **Additional Notes and Observations:**

- TRS conducted a Health & Safety tailgate meeting in the morning with K&S and CDM Smith personnel.
- K&S brought their track-mounted Direct Push Technology (DPT) Model 6610 Geoprobe with them when they re-mobilized to the site. This rig will be used to install the "D" MPEs in the easement east of Marshall Street.
- TRS purchased a thread die and was able to improve the threads of some of the 2-inch diameter stainless steel piping that will be used to construct the groundwater piezometers (GWPs). They will continue to work on the threads of the remaining 2-inch diameter stainless steel piping and anticipate that all of the threads can be repaired with the die

once an attachment to provide more leverage to turn the die is purchased tomorrow.

**Verbal Communications between CDM Smith and TRS Regarding Concerns or Deficiencies:**

- Jeff stated that K&S needs to obtain their own utility clearance prior to initiating the installation of the "D" MPEs in the easement east of Marshall Street.

**Potential Work Tomorrow:**

- K&S will complete the installation of MPE-G3 then move to the location of GWP-K3 and continue advancing the 4.25-inch ID HSAs that were advanced to 24.5' bgs on 7/28/16 to install that GMP. If the installation of GMP-K3 goes smoothly, K&S will also attempt to install GMP-H6 tomorrow.



# DAILY ACTIVITY REPORT

**Date:** 8/2/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site  
Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** 70 degrees, clear, wind is 1-3 mph S. Forecast is for a chance of brief afternoon showers and the temperature to go into the mid to upper 80s.

**Report Author:** David Rojas (CDM Smith)

**Personnel/visitors onsite:**

**CDM Smith:** David Rojas

**TRS:** Brad Morris, Jeff Riffe, & Ted Highley

**K&S Engineers, Inc. (K&S):** Eric DeWitt & Carlos Santana

**Visitors:** None

**Work Performed Today Onsite by TRS and Contractors for TRS:**

**Installation of ERH Multi-phase Extraction (MPE) electrode G3 (incomplete)**

- K&S used their Diedrich-120 (D-120) truck-mounted drilling rig to resume advancing 12.25" diameter hollow stem augers (HSAs) with a wooden plug in the bit, drilling to 39.5 feet below ground surface (bgs). K&S had already drilled to 24.5 feet bgs on 8/1/16. K&S charged the HSAs with water between flight connections.
- Lithology & Photoionization Detector (PID) Readings:

DEPTH (ft bgs)	PID (ppm)	LITHOLOGY
24.5 - 31	0.3 - 10.8	SAND, lt to mod gry yel brn, f-grn w/few m-grn, moist becoming wet below ~28' bgs, no to sli odor.
31 - 35	38 - 58	SAND, mod greenish gry brn, f-grn w/some m-grn tr c-grn, wet, some staining increasing with depth, mod odor
31 - 39.5	72 - 65	SAND, mod greenish gry brn, f-m grn w/tr c-grn, wet, some more predominant staining, strong to mod odor
- K&S lowered 4-inch diameter black iron Sch 40 pipe with capped end inside the HSAs. Pipe consists of one 21-foot long joint with vertical 40-slot and one 18.5-foot joint only slotted in bottom 13.5 feet. TRS applied conductive paste on threads of pipe prior to making the connection. Top of slotted interval ~3.5 feet bgs.
- Before beginning to pull out of the hole (POH) with the HSAs, K&S poured one 50-lb bag of steel shot and two graphite/steel shot mix into the HSAs, and pushed down on the 4" black iron pipe with the rig's auger drive cap to push out the wooden plug in the HSA bit. Mix = 3 50-lb bags of SWS Earth Contact Backfill + 1 50-lb bag of iron shot.
- K&S continued POH with HSAs while pouring graphite/steel shot mix into HSAs (keeping mix at least five feet inside HSAs until reaching the prescribed level of 23' bgs). Required 4.25 mixes to bring graphite/iron shot to 23 feet bgs. K&S continued POH with HSAs while pouring #4 silica sand into HSAs (keeping sand at least eight feet inside HSAs until POH w/HSAs. Required 32 50-lb bags of sand to bring it to 0.5 foot bgs.

- TRS pushed a drip tube in the borehole adjacent to the electrode leaving 0.5 feet of the pipe ags.

#### **Installation of ERH Groundwater Piezometer (GWP)-K3 (incomplete)**

- K&S used their D-120 truck-mounted drilling rig to resumed advancing 4.25" inside diameter (ID) HSAs (which create a 7.88" diameter hole) with a wooden plug in the bit, drilling to 45.5 feet bgs. K&S had already drilled to 24.5 feet bgs on 7/28/16. K&S charged the HSAs with water between flight connections.
- Because there was ~6" of sand in the HSAs, K&S lowered 1.75" diameter AWJ rods inside the HSAs to 45' bgs and flushed (suspended) sand material [no water or sand was brought to the surface during flushing]. Then, K&S bumped the wooden plug and POH w/ rods and, with help from TRS personnel, lowered the stainless-steel (SS) material for the GWP in the HSAs. From bottom to top, these 2" diameter materials include a SS cap, 5' long SS riser (sump), SS coupler, 10' long SS V-wrapped 20-slot well screen, SS coupler, 10' long SS V-wrapped 20-slot well screen, SS coupler, 10' long SS riser, SS coupler, and a 10' long SS riser. TRS personnel applied Teflon tape to the threads at each connection. Although this would appear to be 45 feet of materials, due to the cap, couplers and exposed threads, the total length of the SS materials for the GWP is 47.6 feet.
- Once K&S completed lowering the SS materials for the GWP in the HSAs, they began slowly pouring #4 silica sand into HSAs to set a sandpack in the annulus while picking up (PU) and POH w/ HSAs (keeping sand at least one foot inside HSAs. While PU the HSAs, the SS GWP materials also rose over one foot. K&S obtained approval from TRS to use their center plug to gently hammer the SS materials in an attempt to push them down, but only succeeded in pushing them down about 2 inches. Because the SS materials rose during construction, the total depth of the SS materials and the screened interval are higher than planned. Also, it appears ~0.83' of either fine sand material from the #4 sand or the formation flowed into the SS material during construction. The following are some construction details for GWP-K3:
  - Top of SS materials = 3.7' ags
  - Bottom of SS materials = 43.9' bgs
  - Screened Interval = 18' bgs to 38.5' bgs
  - Top of Sandpack = 16' bgs
  - Sand inside SS materials ~0.83'
- Required 17 50-lb bags of #4 Silica sand to bring it to 16 feet bgs in the annulus.
- K&S poured grout into the HSAs while finishing POH, filling the remainder of the annulus up to approximately 0.5 feet bgs. Required 4.5 94-lb bags of Type I Portland cement to bring grout to 0.5 feet bgs.

#### **Installation of ERH GWP-H6 (incomplete)**

- K&S used their D-120 truck-mounted drilling rig to advance a pilot hole with 4.25" ID HSAs (which create a 7.88" diameter hole) with center plug on 1.75-inch AWJ rod to 5 feet bgs. K&S POH with the HSA and center plug, installed a wooden plug in the bit, and resumed drilling.
- Lithology & PID Readings:
 

<u>DEPTH</u> <u>(ft bgs)</u>	<u>PID</u> <u>(ppm)</u>	<u>LITHOLOGY</u>
0 – 3	0.1	Gravely SAND, med yel brn mottled w/dk brn, f-m grn, sli silty, dry, no odor
3 – 6	0.3	Silty SAND, dk brn, f-grn w/few m-grn & tr c-grn, dry, no odor
6 – 8	0.1	Silty Gravely SAND, mod to dk yel brn, f-grn, dry, no odor



<u>DEPTH</u> <u>(ft bgs)</u>	<u>PID</u> <u>(ppm)</u>	<u>LITHOLOGY</u>
8 – 11	0.1 – 0.3	SAND, lt to mod yel brn, f-grn, sli silty, dry, no odor, becoming less silty and lighter in color w/ depth
11 – 14	0.1	SAND, mod yel brn, f-grn, sli silty, dry, no odor
14 – 24.5	0.1	SAND, lt yel brn, f-grn, dry becoming sli moist w/ depth, no odor

- K&S ceased advancing 4.25" diameter HSAs @ 24.5 feet bgs because they would not be able to complete the installation of the GMP within their 10-hour work day. SDFN.

#### **Installation of 1" Copper Entrainment Pipes and Electrode Caps @ MPE-L4 & MPE-L5**

- For each of these two electrodes, TRS soldered together sections of 1" diameter copper pipe, cut an angled end on the pipe and drilled four air vent holes in the bottom 3.25' of the pipe before lowering the pipe inside the electrode, screwing it into an electrode cap that was then screwed onto the top of the electrode after a conductive paste was applied to the threads. The lowest of the vent holes is 1/4" diameter and is ~0.25' from the bottom of the pipe. The second vent hole is 1/4" diameter and is ~1.25' from the bottom of the pipe. The third vent hole is 1/8" diameter and is ~2.25' from the bottom of the pipe. The top vent hole is 1/8" diameter and is ~3.25' from the bottom of the pipe. The following are additional details regarding these installations:
  - MPE-L4
    - Water level measured before pipe installed = 28.03' below top of electrode
    - Bottom of entrainment pipe = 28.6' below top of electrode
  - MPE-L5
    - Water level measured before pipe installed = 28.3' below top of electrode
    - Bottom of entrainment pipe = 28.9' below top of electrode.

#### **Additional Notes and Observations:**

- TRS conducted a Health & Safety tailgate meeting in the morning with K&S and CDM Smith personnel.
- Jeff & Ted used the thread die with a ratcheting devise and a file to repair the threads on SS piping for the GWPs.
- K&S is expected to receive utility clearance for Marshall St. at 12:15 on 8/3/16.

#### **Verbal Communications between CDM Smith and TRS Regarding Concerns or Deficiencies:**

- The construction of GWP-K3 is not as indicated in the figures provided by TRS. This is in part due to the cap, couplers and exposed threads causing the total length of the SS materials for the GWPs to be 47.6 feet long, not 45 feet as detailed in the figure. Also, because the SS materials rose during construction, the total depth of the SS materials and the screened interval are higher than planned. To compensate for this, the boreholes for the remaining 7 GWPs will be advanced to 47' bgs instead of 45.5' bgs.

#### **Potential Work Tomorrow:**

- K&S will complete the installation of GWP-H6 with the D-120 rig and then switch to using the Geoprobe 6610 Direct Push Technology (DPT) rig to install one of the "D" MPEs in the Marshall Street easement. TRS will continue to install entrainment pipes.

# DAILY ACTIVITY REPORT

**Date:** 8/3/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** 74 degrees, clear, wind is calm. Forecast is for a chance of brief afternoon showers and the temperature to go into the lower 90s.

**Report Author:** David Rojas (CDM Smith)

**Personnel/visitors onsite:**

**CDM Smith:** David Rojas

**TRS:** Brad Morris, Jeff Riffe, & Ted Highley

**K&S Engineers, Inc. (K&S):** Eric DeWitt & Carlos Santana

**Visitors:** None

**Work Performed Today Onsite by TRS and Contractors for TRS:**

**Installation of ERH Groundwater Piezometer (GWP)-H6 (incomplete)**

- K&S used their Diedrich-120 (D-120) truck-mounted drilling rig to resumed advancing 4.25" diameter hollow stem augers (HSAs) with a wooden plug in the bit, drilling to 48 feet below ground surface (bgs). K&S had already drilled to 24.5 feet bgs on 8/2/16. K&S attempted to charge the HSAs with water between flight connections, but water was leaking out of HSAs rapidly. However, wooden plug remained in bottom of HSAs and there did not appear to be significant amount of sediment in HSAs.
- Lithology & Photoionization Detector (PID) Readings:

DEPTH (ft bgs)	PID (ppm)	LITHOLOGY
24.5 - 30	0.3 - 0.9	SAND, lt to mod yel brn, f-grn w/tr to few m-grn, sli moist becoming moist to wet w/depth, no odor.
30 - 33	0.9 - 1.1	SAND, mod yel brn, f-m grn, wet, no odor
33 - 38	53.2 - 168	SAND, lt to mod greenish gry brn darker w/depth, f-m grn w/tr to few c-grn w/depth, wet, stained, mod to strong odor inc. w/depth
38 - 41	186 - 265	SAND, mod gry brn, f-m grn w/tr to few c-grn, wet, stained, strong odor
41 - 48	226 - 76	SAND, mod yel brn, f-grn w/some m-grn & tr c-grn, spotty staining, wet, strong to mod odor dec. w/depth
- K&S lowered 1.75" diameter AWJ rods inside the HSAs to 48' bgs and flushed with ~25 gallons water [no water or sand was brought to the surface during flushing]. Then, K&S bumped the wooden plug and POH w/rods and, with help from TRS personnel, lowered the stainless-steel (SS) material for the GWP in the HSAs. From bottom to top, these 2" diameter materials include a SS cap, 5' long SS riser (sump), SS coupler, 10' long SS V-wrapped 20-slot well screen, SS coupler, 10' long SS V-wrapped 20-slot well screen, SS coupler, 10' long SS riser, SS coupler, and a 10' long SS riser. TRS personnel applied



Teflon tape to the threads at each connection. Although this would appear to be 45 feet of materials, due to the cap, couplers and exposed threads, the total length of the SS materials for the GWP is 47.6 feet.

- Once K&S completed lowering the SS materials for the GWP in the HSAs, they began slowly pouring #4 silica sand into HSAs to set a sandpack in the annulus while picking up (PU) and POH w/HSAs (keeping sand at least one foot inside HSAs. While PU the HSAs, the SS GWP materials were also purposely raised so that the bottom of the SS materials were at 45.5' bgs. As K&S continued to construct sandpack and PU HSAs, the SS GWP materials rose another 0.3'. The following are some construction details for GWP-H6:
  - Top of SS materials = 2.4' ags
  - Bottom of SS materials = 45.2' bgs
  - Screened Interval = 19.2' bgs to 39.7' bgs
  - Top of Sandpack = 17' bgs
- Required 19 50-lb bags of #4 Silica sand to bring it to 17 feet bgs in the annulus.
- K&S poured grout into the HSAs while finishing POH, filling the remainder of the annulus up to approximately 0.5 feet bgs. Required 5 94-lb bags of Type I Portland cement to bring grout to 0.5 feet bgs.

#### **Installation of ERH Multi-phase Extraction (MPE) electrode D4 (incomplete)**

- K&S used their Geoprobe 6610 track-mounted Direct Push Technology (DPT) drilling rig and their 8.25" ID HSAs (which create a 12.25" diameter hole) to cut through the asphalt pavement at the proposed MPE location. Then they used a hand auger to advance two adjacent pilot holes to 5' bgs to verify utility clearance. After advancing the 4.25" ID HSAs with center plug on 1.75-inch AWJ rod to 5 feet bgs, they POH with the HSA and center plug, installed a wooden plug in the bit, and resumed drilling w/the HSAs.
- Lithology & PID Readings:

DEPTH (ft bgs)	PID (ppm)	LITHOLOGY
0 - 0.5	Not Meas.	ASPHALT
0.5 - 1.4	0.3	LIMEROCK - roadbase
1.4 - 2.0	0.1	Silty Gravelly SAND, dk brn, f-grn, dry, no odor
2.0 - 2.5	0.3	Silty SAND, mod to dk org brn, f-grn w/tr m&c grn, dry to sli moist, no odor
2.5 - 3.0	0.1	Silty SAND, mod yel brn, f-grn, dry, no odor
3.0 - 6.0	0.3	Silty SAND, lt yel brn, f-grn, becoming less silty w/depth, dry, no odor
6.0 - 12	0.0	SAND, lt grayish yel brn, f-grn, dry, no odor
12 - 25	0.0*	SAND, lt yel brn, f-grn, dry, no odor, *0.5ppm @ 18' bgs
- K&S ceased advancing 8.25" ID HSAs @ 25 feet bgs because they would not be able to complete the installation of the MPE within their 10-hour work day. K&S personnel placed a temporary wooden plug in the top of the HSAs to secure them for the night. Also, a safety cone and 2 barricades were positioned to protect the HSAs. SDFN.

#### **Installation of 1" Copper Entrainment Pipes and Electrode Caps @ 5 MPEs**

- For each of these five electrodes, TRS soldered together sections of 1" diameter copper pipe, cut an angled end on the pipe and drilled four air vent holes in the bottom 3.25' of the pipe before lowering the pipe inside the electrode, screwing it into an electrode cap that was then screwed onto the top of the electrode after a conductive paste was applied to the threads. The lowest of the vent holes is 1/4" diameter and is ~0.25' from the bottom

of the pipe. The second vent hole is 1/4" diameter and is ~ 1.25' from the bottom of the pipe. The third vent hole is 1/8" diameter and is ~ 2.25' from the bottom of the pipe. The top vent hole is 1/8" diameter and is ~ 3.25' from the bottom of the pipe. The following are additional details regarding these installations:

- MPE-K7
  - Water level measured before pipe installed = 27.92' below top of electrode
  - Bottom of entrainment pipe = 28.51' below top of electrode.
- MPE-L6
  - Water level measured before pipe installed = 28.4' below top of electrode
  - Bottom of entrainment pipe = 28.9' below top of electrode
- MPE-L7
  - Water level measured before pipe installed = 27.15' below top of electrode
  - Bottom of entrainment pipe = 27.73' below top of electrode.
- MPE-M5
  - Water level measured before pipe installed = 27.9' below top of electrode
  - Bottom of entrainment pipe = 28.4' below top of electrode
- MPE-M6
  - Water level measured before pipe installed = 27.99' below top of electrode
  - Bottom of entrainment pipe = 28.57' below top of electrode.

#### **Additional Notes and Observations:**

- TRS conducted a Health & Safety tailgate meeting in the morning with K&S and CDM Smith personnel.

#### **Verbal Communications between CDM Smith and TRS Regarding Concerns or Deficiencies:**

- TRS, K&S, and CDM Smith personnel looked at the "D" MPE proposed locations and determined the K&S should be able to rig up their Geoprobe rig at the proposed D3 and D4 locations without having the mast within 10 feet of the overhead electrical wires (OEWs). However, the proposed location of MPE-D5 may need to be moved to maintain a 10' clearance of the OEWs.

#### **Potential Work Tomorrow:**

- K&S will use their Geoprobe 6610 DPT rig to install the electrodes for MPE-D4 and MPE-D3 and possibly advance HSAs to 25' at the proposed (or possibly a modified) location of MPE-D5. TRS will continue to install entrainment pipes and electrode caps.



# DAILY ACTIVITY REPORT

**Date:** 8/4/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** 73 degrees, clear, wind is 1-3 mph S. Forecast is for temperature to go into the lower 90s.

**Report Author:** David Rojas (CDM Smith)

## Personnel/visitors onsite:

**CDM Smith:** David Rojas

**TRS:** Brad Morris, Jeff Riffe, & Ted Highley

**K&S Engineers, Inc. (K&S):** Eric DeWitt & Carlos Santana

**Visitors:** Brett Baker (Bodine)

## Work Performed Today Onsite by TRS and Contractors for TRS:

### Installation of ERH Multi-phase Extraction (MPE) electrode D4 (incomplete)

- K&S had used their Geoprobe 6610DT track-mounted Direct Push Technology (DPT) drilling rig and their 8.25" ID hollow-stem augers (HSAs) (which create a 12.25" diameter hole) to advance the borehole for the MPE to 25' below ground surface (bgs) before shutting down for the night (SDFN) on 8/3/16. K&S moved in and rigged up (MIRU) the DPT on the HSAs and continued advancing them to 39.5' bgs (charging them with water at each connection).
- Lithology & Photoionization Detector (PID) Readings:

DEPTH (ft bgs)	PID (ppm)	LITHOLOGY
25 - 28	0.8	SAND, lt yel brn, f-grn, dry becoming moist @ 26' bgs, no odor
28 - 34	8.7 - 177	SAND, lt to med grayish yel brn, f-grn w/few m-grn, spotty staining, sli to strong odor, staining/odor/PID readings inc. w/depth, wet
34 - 37	183 - 191	SAND, med greenish grayish brn, f-m grn w/tr to few c-grn, stained, strong odor, wet
37 - 39.5	172 - 342	SAND, mod greenish brownish gray, f-m grn w/tr to few c grn, stained, strong odor, wet
- K&S lowered 4-inch diameter black iron Sch 40 pipe inside the HSAs. Pipe consists of three 10.5-foot long joints and one 4.5-foot joint with vertical 40-slot connected with couplers and capped on both ends. The cap on the top is a temporary cap that will be replaced with the appropriate electrode cap with fittings once all of the drilling is complete in the Marshall Street area and TRS excavates trenches to install subsurface piping and cables. TRS applied conductive paste on the threads of pipe prior to making all of the connections except the temporary cap on top. Top of slotted interval ~3 feet bgs.
- Before beginning to pull out of the hole (POH) with the HSAs, K&S poured one 50-lb bag

of steel shot and two graphite/steel shot mixes into the HSAs. Mix = 3 50-lb bags of SWS Earth Contact Backfill + 1 50-lb bag of iron shot.

- K&S continued POH with HSAs while pouring graphite/steel shot mix into HSAs (keeping mix at least five feet inside HSAs until reaching the prescribed level of 23' bgs). Required 4.25 mixes to bring graphite/iron shot to 23 feet bgs. K&S continued POH with HSAs while pouring #4 silica sand into HSAs (keeping sand at least eight feet inside HSAs until POH w/HSAs. Required 28 50-lb bags of sand to bring it to surface.
- A drip tube (a 4-foot long ½" diameter copper pipe with a stainless steel screen clamped onto the bottom of it) was placed in the lead HSA just before it was POH so as the HSA was POH the drip tube settled in the borehole adjacent to the black iron electrode. The top of the drip tube only dropped to 15" bgs, so it will have to be pushed deeper when TRS excavates the trenches to complete the construction of the MPE.

#### **Installation of ERH Multi-phase Extraction (MPE) electrode D3 (incomplete)**

- K&S used their Geoprobe 6610DT track-mounted DPT drilling rig and their 8.25" ID HSAs to cut through the asphalt pavement at the proposed MPE location. Then they used a hand auger to advance two adjacent pilot holes to 5' bgs to verify utility clearance. After advancing the 8.25" ID HSAs with center plug on 1.75-inch AWJ rod to 5 feet bgs, they POH with the HSA and center plug, installed a wooden plug in the bit, and resumed drilling w/the HSAs.
- Lithology & PID Readings:  

<u>DEPTH</u> (ft bgs)	<u>PID</u> (ppm)	<u>LITHOLOGY</u>
0 - 0.5	Not Meas.	ASPHALT
0.5 - 1.0	0.0	SAND & LIMEROCK - roadbase, dry, no odor, sand is grayish brn, f-grn
1.0 - 2.0	0.0	Silty Gravely SAND, dk dusky brn, f-grn, sli clayey w/low plasticity, dry, no odor
2.0 - 4.0	0.0	Silty SAND, mod yel brn mottled w/dk yel brn, lighter in color w/depth, f-grn, dry, no odor
4.0 - 6.0	0.0	Silty SAND, lt gry brn mottled w/mod yel brn, f-grn, becoming less silty w/depth, dry, no odor
6.0 - 14	0.1 - 0.3	SAND, lt grayish yel brn, f-grn, dry, no odor
14 - 28	0.3 - 4.3	SAND, lt grayish yel brn mottled w/mod org brn, f-grn, dry becoming moist @ ~26' bgs, no odor or PID readings >0.3 until 28' bgs - sli odor
28 - 31	18.7 - 45	SAND, lt greenish grayish yel brn, f-grn, spotty staining, sli to mod odor, staining/odor/PID readings inc. w/depth, moist to wet
31 - 35	47 - 97	SAND, med grayish greenish brn, f-grn w/few m-grn, stained, mod to strong odor, wet
35 - 39.5	120 - 258	SAND, mod greenish gray, f-m grn w/tr to few c-grn inc w/depth, increased amt of dk mineral grains compared to units above, stained, strong odor, wet, PID = 208 from cuttings on bottom flight of lead HSA after POH
- K&S lowered 4-inch diameter black iron Sch 40 pipe inside the HSAs. Pipe consists of three 10.5-foot long joints and one 4.5-foot joint with vertical 40-slot connected with couplers and capped on both ends. The cap on the top is a temporary cap that will be replaced with the appropriate electrode cap with fittings once all of the drilling is complete in the Marshall Street area and TRS excavates trenches to install subsurface



pipings and cables. TRS applied conductive paste on the threads of pipe prior to making all of the connections except the temporary cap on top. Top of slotted interval ~3 feet bgs.

- Before beginning to POH with the HSAs, K&S poured one 50-lb bag of steel shot and two graphite/steel shot mixes into the HSAs. Mix = 3 50-lb bags of SWS Earth Contact Backfill + 1 50-lb bag of iron shot.
- K&S continued POH with HSAs while pouring graphite/steel shot mix into HSAs (keeping mix at least five feet inside HSAs until reaching the prescribed level of 23' bgs). Required 4.5 mixes to bring graphite/iron shot to 22 feet bgs. K&S continued POH with HSAs while pouring #4 silica sand into HSAs (keeping sand at least eight feet inside HSAs until POH w/HSAs. Required 28.5 50-lb bags of sand to bring it to surface.
- A drip tube (a 4-foot long ½" diameter copper pipe with a stainless steel screen clamped onto the bottom of it) was placed in the lead HSA just before it was POH so as the HSA was POH the drip tube settled in the borehole adjacent to the black iron electrode. The top of the drip tube only dropped to 12" bgs, so it will have to be pushed deeper when TRS excavates the trenches to complete the construction of the MPE.

#### **Installation of ERH Multi-phase Extraction (MPE) electrode D5 (incomplete)**

- K&S used their Geoprobe 6610DT track-mounted DPT drilling rig and their 8.25" ID HSAs to cut through the asphalt pavement at the proposed MPE location. Then they used a hand auger to advance two adjacent pilot holes to 5' bgs to verify utility clearance. After advancing the 8.25" ID HSAs with center plug on 1.75-inch AWJ rod to 5 feet bgs, they POH with the HSA and center plug, installed a wooden plug in the bit, and resumed drilling w/the HSAs.
- Lithology & PID Readings:  

<u>DEPTH</u> <u>(ft bgs)</u>	<u>PID</u> <u>(ppm)</u>	<u>LITHOLOGY</u>
0 – 0.5	Not Meas.	ASPHALT
0.5 – 1.5	0.0	LIMEROCK – roadbase (sandy)
1.5 – 2.5	0.0	Silty Gravelly SAND, dk dusky brn, f-grn, sli clayey w/low plasticity clay, dry, no odor
2.5 – 3.5	0.0	Silty SAND, mod to dk org brn, f-grn, dry, no odor
3.5 – 8.0	0.1	Silty SAND, lt yel brn, f-grn, less silty w/depth, dry, no odor
8.0 – 11	0.0	SAND, lt to mod yel brn mottled w/dk brn, f-grn, sli silty, dry, no odor
11 – 18	0.0 – 0.1	SAND, lt yel brn, f-grn, sli silty becoming less silty w/depth, dry, no odor
18 – 25	0.0 – 0.1*	SAND, lt yel brn, f-grn w/tr to few m-grn, tr silty becoming less silty w/depth, dry, no odor, *0.4 ppm @ 18' bgs
- K&S ceased advancing 8.25" ID HSAs @ 25 feet bgs because they would not be able to complete the installation of the MPE within their 10-hour work day. K&S personnel placed a temporary wooden plug in the top of the HSAs to secure them for the night. Also, a safety cone and 2 barricades were positioned to protect the HSAs. SDFN.

#### **Installation of 1" Copper Entrainment Pipes, Electrode Caps, and Cap Fittings @ 7 MPEs**

- For each of these seven electrodes, TRS constructed entrainment pipes by soldered together sections of 1" diameter copper pipe, cut an angled end on the bottom of the pipe and drilled four air vent holes in the bottom 3.25' of the pipe. The lowest of the vent holes on the entrainment pipe is ¼" diameter and is ~0.25' from the bottom of the pipe. The second vent hole is ¼" diameter and is ~1.25' from the bottom of the pipe. The third

vent hole is 1/8" diameter and is ~ 2.25' from the bottom of the pipe. The top vent hole is 1/8" diameter and is ~ 3.25' from the bottom of the pipe. A threaded coupler was soldered to the top of the pipe.

- The entrainment pipe was then lowered most of the way inside the electrode, screwing it into the bottom of an electrode cap that was then screwed onto the top of the electrode after a conductive paste was applied to the threads. Then, metal fittings were screwed into the top of the cap that will eventually be attached to the vapor recovery piping and multi-phase extraction line.
- The following are specific details regarding each of these installations:
  - MPE-K3
    - Water level measured before pipe installed = 27.9' below top of electrode
    - Bottom of entrainment pipe = 28.6' below top of electrode.
  - MPE-K4
    - Water level measured before pipe installed = 28.5' below top of electrode
    - Bottom of entrainment pipe = 29.1' below top of electrode
  - MPE-K6
    - Water level measured before pipe installed = 28.15' below top of electrode
    - Bottom of entrainment pipe = 28.90' below top of electrode.
  - MPE-J3
    - Water level measured before pipe installed = 27.5' below top of electrode
    - Bottom of entrainment pipe = 28.1' below top of electrode
  - MPE-J4
    - Water level measured before pipe installed = 27.64' below top of electrode
    - Bottom of entrainment pipe = 28.25' below top of electrode.
  - MPE-J5
    - Water level measured before pipe installed = 27.94' below top of electrode
    - Bottom of entrainment pipe = 28.60' below top of electrode
  - MPE-J6
    - Water level measured before pipe installed = 27.70' below top of electrode
    - Bottom of entrainment pipe = 28.35' below top of electrode.

#### **Additional Notes and Observations:**

- TRS conducted a Health & Safety tailgate meeting in the morning with K&S and CDM Smith personnel.
- Brett Baker of Bodine visited the site and showed Jeff and Brad where he believed the conduits and piping associated with the groundwater extraction system (GWES) were under Marshall St. and at the vault. Based on his recollections where the subsurface wiring/piping are located, the only proposed drilling location for the ERH system installations that might encounter them is MPE-C4. In order to avoid hitting the GWES wiring/piping, it will be necessary to move this location to the east or west at least 4-5 feet. Brad stated that since all of the "B" locations will have to be moved to the east to avoid the subsurface gas line near their locations, it is likely that the proposed location for MPE-C4 will be moved to the east.

#### **Verbal Communications between CDM Smith and TRS Regarding Concerns or Deficiencies:**

- See second bullet above.



**Potential Work Tomorrow:**

- K&S will use their Geoprobe 6610 DPT rig to install the electrode for MPE-D5 and TRS will continue to install entrainment pipes and electrode caps.

# DAILY ACTIVITY REPORT

**Date:** 8/5/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** 64 degrees, overcast, wind is 4-8 mph N. Heavy rainfall occurred last night. Forecast is for temperature to go into the low to mid 80s.

**Report Author:** David Rojas (CDM Smith)

## Personnel/visitors onsite:

**CDM Smith:** David Rojas

**TRS:** Brad Morris, Jeff Riffe, & Ted Highley

**K&S Engineers, Inc. (K&S):** Eric DeWitt & Carlos Santana

**Visitors:** None

## Work Performed Today Onsite by TRS and Contractors for TRS:

### Installation of ERH Multi-phase Extraction (MPE) electrode D5 (incomplete)

- K&S had used their Geoprobe 6610DT track-mounted Direct Push Technology (DPT) drilling rig and their 8.25" ID hollow-stem augers (HSAs) (which create a 12.25" diameter hole) to advance the borehole for the MPE to 25' below ground surface (bgs) before shutting down for the night (SDFN) on 8/4/16. K&S moved in and rigged up (MIRU) the DPT on the HSAs and continued advancing them to 39.5' bgs (charging them with water at each connection).
- Lithology & Photoionization Detector (PID) Readings:

DEPTH (ft bgs)	PID (ppm)	LITHOLOGY
25 - 34	0.5 - 16.2	SAND, lt yel brn, f-grn w/few to some m-grn, moist becoming wet @ 31' bgs, tr odor
34 - 37	20.1 - 47.2	SAND, lt greenish yel brn, f-grn w/few m-grn, spotty staining, sli to mod odor, odor & PID readings inc. w/depth, wet
37 - 38	118 - 167	SAND, lt to mod greenish yel brn, f-grn w/some m-grn, spotty staining, mod to strong odor, wet
38 - 39.5	87 - 202*	SAND, mod greenish brownish gray, f-m grn w/tr to few c grn, spotty staining, mod to strong odor, wet (*PID readings from cuttings collected from HSAs while POH varied widely; 202 ppm was highest reading, but cuttings from flights of the last HSA POH were all in the low 100s
- K&S lowered 4-inch diameter black iron Sch 40 pipe inside the HSAs. Pipe consists of three 10.5-foot long joints and one 4.5-foot joint with vertical 40-slot connected with couplers and capped on both ends. The cap on the top is a temporary cap that will be replaced with the appropriate electrode cap with fittings once all of the drilling is complete in the Marshall Street area and TRS excavates trenches to install subsurface piping and cables. TRS applied conductive paste on the threads of pipe prior to making



all of the connections except the temporary cap on top. Top of slotted interval ~3 feet bgs.

- Before beginning to pull out of the hole (POH) with the HSAs, K&S poured one 50-lb bag of steel shot and two graphite/steel shot mixes into the HSAs. Mix = 3 50-lb bags of SWS Earth Contact Backfill + 1 50-lb bag of iron shot.
- K&S continued POH with HSAs while pouring graphite/steel shot mix into HSAs (keeping mix at least five feet inside HSAs until reaching the prescribed level of 23' bgs). Required 4.25 mixes to bring graphite/iron shot to 23 feet bgs. K&S continued POH with HSAs while pouring #4 silica sand into HSAs (keeping sand at least eight feet inside HSAs until POH w/HSAs. Required 29 50-lb bags of sand to bring it to surface.
- A drip tube (a 5-foot long ½" diameter copper pipe with a stainless steel screen clamped onto the bottom of it) was placed in the lead HSA just before it was POH so as the HSA was POH the drip tube settled in the borehole adjacent to the black iron electrode. The top of the drip tube only dropped to 24" bgs, so it will have to be pushed deeper when TRS excavates the trenches to complete the construction of the MPE.

#### **Installation of ERH GWP-G5 (incomplete)**

- K&S used their Diedrich-120 truck-mounted drilling rig to advance a pilot hole with 4.25" ID HSAs (which create a 7.88" diameter hole) with center plug on 1.75-inch AWJ rod to 5 feet bgs. K&S POH with the HSA and center plug, installed a wooden plug in the bit, and resumed drilling.
- Lithology & PID Readings:

DEPTH (ft bgs)	PID (ppm)	LITHOLOGY
0 - 0.1	Not Meas.	ASPHALT
0.1 - 0.5	0.2	Gravelly Silty SAND, med brn mottled w/dk brn, f-m grn w/some c-grn, dry, no odor
0.5 - 2.5	0.5	Silty SAND, dk dusky brn, f-m grn w/few c-grn, sli clayey (lo pl), sli moist, no odor
2.5 - 3.5	0.1	Silty SAND, dk red brn, f-grn w/few m-grn, tr gravel, dry, no odor
3.5 - 6	0.2	Silty SAND, med orangish brn, f-grn w/tr m&c grn, dry, no odor
6 - 17	0.6	SAND, lt grayish yel brn, f-grn, dry, no odor
17 - 24.5	0.6	SAND, lt to med grayish yel brn, f-grn, dry, no odor
- K&S ceased advancing 4.25" diameter HSAs @ 24.5 feet bgs because they would not be able to complete the installation of the GMP within their 5-hour work day. Shut down for the weekend (SDFW).

#### **Installation of 1" Copper Entrainment Pipes, Electrode Caps, and Cap Fittings @ 5 MPes**

- For each of these five electrodes, TRS measured the static water level (SWL) in the electrode then constructed entrainment pipes by soldered together sections of 1" diameter copper pipe, cut an angled end on the bottom of the pipe and drilled four air vent holes in the bottom 3.5' of the pipe. The lowest of the vent holes on the entrainment pipe is ¼" diameter and is ~0.5' from the bottom of the pipe. The second vent hole is ¼" diameter and is ~1.5' from the bottom of the pipe. The third vent hole is 1/8" diameter and is ~2.5' from the bottom of the pipe. The top vent hole is 1/8" diameter and is ~3.5' from the bottom of the pipe. A threaded coupler was soldered to the top of the pipe.
- The entrainment pipe was then lowered most of the way inside the electrode, screwing it into the bottom of an electrode cap that was then screwed onto the top of the electrode after a conductive paste was applied to the threads. Then, metal fittings were screwed into the top of the cap that will eventually be attached to the vapor recovery piping and

multi-phase extraction line. The distance from the bottom of the top plate of the cap and the top of the electrode pipe = 1".

- The following are specific details regarding each of these installations:
  - MPE-H2
    - SWL before entrainment pipe installed = 27.64' below top of electrode
    - Bottom of entrainment pipe = 28.22' below top plate of electrode cap
  - MPE-H3
    - SWL before entrainment pipe installed = 27.43' below top of electrode
    - Bottom of entrainment pipe = 28.01' below top plate of electrode cap
  - MPE-H4
    - SWL before entrainment pipe installed = 27.19' below top of electrode
    - Bottom of entrainment pipe = 27.77' below top plate of electrode cap
  - MPE-H5
    - SWL before entrainment pipe installed = 27.39' below top of electrode
    - Bottom of entrainment pipe = 27.97' below top plate of electrode cap
  - MPE-H6
    - SWL before entrainment pipe installed = 27.72' below top of electrode
    - Bottom of entrainment pipe = 28.30' below top plate of electrode cap

#### **Additional Notes and Observations:**

- TRS conducted a Health & Safety tailgate meeting in the morning with K&S and CDM Smith personnel.
- K&S loaded the Geoprobe rig on the support trailer and took it back to the shop with them when they left the site.

#### **Verbal Communications between CDM Smith and TRS Regarding Concerns or Deficiencies:**

- None

#### **Potential Work Next Week:**

- K&S will use their Diedrich rig to install the remaining 9 MPEs, 3 GWP, 1 TMP, and 1 VP that are to be located between the west side of the building and the west property line. That will leave the remaining 6 MPEs, 2 GWP, 1 TMP, and 3 VPs in Marshall Street and the VP (VP-L4) and the GWP (GWP-L4) south of the building to install the following week. TRS will continue to install entrainment pipes and electrode caps and will start installing oversleaves and piping to the electrode cap fittings.



# DAILY ACTIVITY REPORT

**Date:** 8/8/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** 71 degrees, clear, wind = 2 - 5 mph NE. Forecast is for the temperature to go into the lower 80s.

**Report Authors:** David Rojas & Kevin Saller (CDM Smith)

**Personnel/visitors onsite:**

**CDM Smith:** David Rojas & Kevin Saller

**TRS:** Brad Morris, Jeff Riffe, & Ted Highley

**K&S Engineers, Inc. (K&S):** Carlos Santana & Jack Zilz

**Visitors:** None

**Work Performed Today Onsite by TRS and Contractors for TRS:**

**Installation of ERH Groundwater Piezometer (GWP)-H6 (incomplete)**

- K&S used their Diedrich-120 (D-120) truck-mounted drilling rig to resumed advancing 4.25" diameter hollow stem augers (HSAs) with a wooden plug in the bit, drilling to 47 feet below ground surface (bgs). K&S had already drilled to 24.5 feet bgs on 8/5/16. K&S charged the HSAs with water between flight connections.
- Lithology & Photoionization Detector (PID) Readings:

DEPTH (ft bgs)	PID (ppm)	LITHOLOGY
24.5 - 31	0.6 - 4.5	SAND, lt to mod grayish yel brn, f-grn w/tr m-grn, moist becoming wet @ 30' bgs, no odor.
31 - 37	302 - 255	SAND, med brn greenish gray, f-m grn, wet, stained, strong odor
37 - 45	218 - 156	SAND, med greenish gry, f-m grn, coarser and more dark mineral grains than unit above, wet, stained, strong odor
45 - 47	210 - 133	SAND, med greenish brn gray, f-m grn w/few c-grn, coarser than unit above, tr gravel, stained but becoming spotty staining w/depth, wet, strong odor
- K&S lowered 1.75" diameter AWJ rods inside the HSAs to 47' bgs and flushed with ~25 gallons water [no water or sand was brought to the surface during flushing]. Then, K&S bumped the wooden plug and POH w/rods and, with help from TRS personnel, lowered the stainless-steel (SS) material for the GWP in the HSAs. From bottom to top, these 2" diameter materials include a SS cap, 5' long SS riser (sump), SS coupler, 10' long SS V-wrapped 20-slot well screen, SS coupler, 10' long SS V-wrapped 20-slot well screen, SS coupler, 10' long SS riser, SS coupler, and a 10' long SS riser. TRS personnel applied Teflon tape to the threads at each connection. Although this would appear to be 45 feet of materials, due to the bottom cap, couplers and exposed threads, the total length of the SS materials for the GWP is 47.6 feet.
- Once K&S completed lowering the SS materials for the GWP in the HSAs, they began

slowly pouring #4 silica sand into HSAs to set a sandpack in the annulus while picking up (PU) and POH w/ HSAs (keeping sand at least one foot inside HSAs. While PU the HSAs, the SS GWP materials were also purposely raised so that the bottom of the SS materials were at 45.4' bgs. As K&S continued to construct sandpack and PU HSAs, the SS GWP materials rose another 1.3'. TRS approved K&S to use the AWJ rod with the centerplug to hammer the SS GWP material down 1.2' before completing the installation of the remainder of the sandpack. The following are some construction details for GWP-H6:

- Top of SS materials = 2.3' ags
- Bottom of SS materials = 45.3' bgs
- Screened Interval = 19.3' bgs to 39.8' bgs
- Top of Sandpack = 14' bgs
- Required 19 50-lb bags of #4 Silica sand to bring it to 14 feet bgs in the annulus.
- K&S poured grout into the HSAs while finishing POH, filling the remainder of the annulus up to approximately 0.5 feet bgs. Required 5 94-lb bags of Type I Portland cement to bring grout to 0.5 feet bgs, including the refilling of the annulus three times after grout settled to ~1' bgs.

#### **Installation of ERH Multi-phase Extraction (MPE) electrode E5 (incomplete)**

- K&S used their D-120 drilling rig and their 8.25" ID HSAs (which create a 12.25" diameter hole) with center plug on 1.75-inch AWJ rod to 5 feet bgs. After drilling the 5' pilot hole, they POH with the HSA and center plug, installed a wooden plug in the bit, and resumed drilling w/ the HSAs.
- Lithology & PID Readings:
 

<u>DEPTH</u> <u>(ft bgs)</u>	<u>PID</u> <u>(ppm)</u>	<u>LITHOLOGY</u>
0 - 0.1	Not Meas.	ASPHALT
0.1 - 0.8	0.0	Gravely SAND, med brn gry, f-m grn, sli silty, dry, no odor
0.8 - 1.5	0.4	Silty SAND, blk to dk dusky brn, f-grn w/ few m-grn, sli clayey, dry, no odor
1.5 - 2.0	0.1	Silty SAND, dk dusky brn, f-grn, sli clayey, dry to sli moist, no odor
2.0 - 3.0	0.0	Gravely SAND, mod to dk yel brn, f-m grn w/ few c-grn, sli to mod silty, dry, no odor
3.0 - 8.0	0.0	Silty SAND, med org brn, f-grn, dry to sli moist, no odor
8.0 - 14	0.5 - 0.1	SAND, lt to mod yel brn, f-grn, sli silty, dry, no odor
14 - 23	0.3	SAND, lt to mod yel brn, f-grn, dry, no odor
23 - 24.5	0.7 - 1.3	SAND, lt to mod yel brn, f-grn w/ few to some m-grn, sli moist, no odor
- K&S ceased advancing 8.25" ID HSAs @ 24.5 feet bgs because they would not be able to complete the installation of the MPE within their 10-hour work day. TRS and K&S personnel secured the site and SDFN.

#### **Installation of 1" Copper Entrainment Pipes, Electrode Caps, and Cap Fittings @ 3 MPEs**

- For each of these three electrodes, TRS measured the static water level (SWL) in the electrode then constructed entrainment pipes by soldered together sections of 1" diameter copper pipe, cut an angled end on the bottom of the pipe and drilled four air vent holes in the bottom 3.5' of the pipe. The lowest of the vent holes on the entrainment pipe is 1/4" diameter and is ~0.5' from the bottom of the pipe. The second vent hole is 1/4" diameter and is ~1.5' from the bottom of the pipe. The third vent hole is 1/8" diameter and is ~2.5' from the bottom of the pipe. The top vent hole is 1/8" diameter and is ~3.5' from



- the bottom of the pipe. A threaded coupler was soldered to the top of the pipe.
- The entrainment pipe was then lowered most of the way inside the electrode, screwing it into the bottom of an electrode cap that was then screwed onto the top of the electrode after a conductive paste was applied to the threads. Then, metal fittings were screwed into the top of the cap that will eventually be attached to the vapor recovery piping and multi-phase extraction line. The distance from the bottom of the top plate of the cap and the top of the electrode pipe = 1".
  - The following are specific details regarding each of these installations:
    - MPE-G3
      - SWL before entrainment pipe installed = 27.20' below top of electrode
      - Bottom of entrainment pipe = 27.78' below top plate of electrode cap
    - MPE-G4
      - SWL before entrainment pipe installed = 27.27' below top of electrode
      - Bottom of entrainment pipe = 27.85' below top plate of electrode cap
    - MPE-G5
      - SWL before entrainment pipe installed = 27.63' below top of electrode
      - Bottom of entrainment pipe = 28.21' below top plate of electrode cap

#### **Additional Notes and Observations:**

- TRS conducted a Health & Safety tailgate meeting in the morning with K&S and CDM Smith personnel.
- CDM Smith personnel discussed use of a finer sand than the #4 sand currently used in the annular space of the groundwater monitoring wells, and the infringement of grout into the sand layers after applying ~16 ft of grout above; an email was sent out to the PM and PE about the issue for resolution.
- TRS has completed installing entrainment pipes and electrode caps in all of the electrodes installed to date (except MPE-K5, which requires the removal of the temporary cap that was "hammered" onto the electrode, stripping the threads).

#### **Verbal Communications between CDM Smith and TRS Regarding Concerns or Deficiencies:**

- Potential change in the use of #4 sand to a finer sand on groundwater monitoring wells.

#### **Potential Work Tomorrow:**

- K&S will use their D-120 rig to complete advancing the boring for the installation of the MPE-E5 electrode, then advance borings and install electrodes at the proposed locations of MPE-F5 and possibly advance HSAs to 25' at the proposed location of MPE-E4. TRS will continue to prepare the bottom sections of 1" diameter copper entrainment pipes in preparation for installing them once a few more electrodes are installed.

# DAILY ACTIVITY REPORT

**Date:** 8/9/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** 72 degrees, partly cloudy, wind is calm. Forecast is for sun & clouds and temperature to go into the mid to upper 80s.

**Report Authors:** David Rojas and Kevin Saller (CDM Smith)

## Personnel/visitors onsite:

**CDM Smith:** David Rojas & Kevin Saller

**TRS:** Chris Phillips, Jeff Riffe, Brad Morris, & Ted Highley

**K&S Engineers, Inc. (K&S):** Eric DeWitt & Carlos Santana

**Visitors:** George Lytwynyshyn (CTS)

## Work Performed Today Onsite by TRS and Contractors for TRS:

### Installation of ERH Multi-phase Extraction (MPE) electrode E5 (incomplete)

- K&S used their Diedrich-120 (D-120) truck-mounted drilling rig to resume advancing 8.25" ID hollow stem augers (HSAs) with a wooden plug in the bit, drilling to 39.5 feet below ground surface (bgs). K&S had already drilled to 24.5 feet bgs on 8/8/16. K&S charged the HSAs with water between flight connections.
- Lithology & Photoionization Detector (PID) Readings:

DEPTH (ft bgs)	PID (ppm)	LITHOLOGY
24.5 - 29	1.8 - 5.3	SAND, lt to mod yel brn, f-m grn, moist, sli odor w/depth
29 - 34	143 - 295	SAND, mod gry brn getting lighter w/depth, f-m grn wet, some staining increasing with depth, mod to strong odor
34 - 37	324 - 284	SAND, mod brownish greenish gry, f-m grn w/tr to few c-grn, wet, stained, strong odor
37 - 39.5	258	SAND, mod brownish greenish gry, f-m grn w/tr to few c-grn, tr f-m gravel, wet, stained, strong odor
- K&S lowered 4-inch diameter black iron Sch 40 pipe with capped bottom inside the HSAs. The bottom 21-foot long joint with vertical 40-slot was lowered into the HSAs first, then an 18.5-foot joint with only the bottom 13.5 feet slotted and a coupler on the bottom was connected to it prior to lower the pipe to the bottom of the boring. The top of slotted interval ~4.5 feet bgs. A temporary cap was placed on the top of the electrode during installation, but it will be replaced with the appropriate electrode cap with fittings once the entrainment pipe is installed. TRS applied conductive paste on the threads of pipe prior to making all of the connections except the temporary cap on top.
- Before beginning to pull out of the hole (POH) with the HSAs, K&S poured one 50-lb bag of steel shot and two graphite/steel shot mix into the HSAs, and pushed down on the 4" black iron pipe with the rig's auger drive cap to push out the wooden plug in the HSA bit. Mix = 3 50-lb bags of SWS Earth Contact Backfill + 1 50-lb bag of iron shot.



- K&S continued POH with HSAs while pouring 3:1 graphite/steel shot mix into HSAs (keeping mix at least five feet inside HSAs until reaching the prescribed level of 23' bgs). Required 4.25 mixes to bring 3:1 graphite/iron shot to 23 feet bgs. K&S continued POH with HSAs while pouring #4 silica/bluestone sand into HSAs (keeping sand at least 5 feet inside HSAs until POH w/HSAs. Required 33 50-lb bags of sand to bring it to 0.5 foot bgs.
- A drip tube (a 5-foot long ½" diameter copper pipe with a stainless steel screen clamped onto the bottom of it) was placed within the annular sand in the lead HSA just before it was POH so as the HSA was POH the drip tube settled in the borehole adjacent to the black iron electrode. The drip tube was subsequently adjusted so that the top of the drip tube ended up ~0.5' above ground surface (ags).
- David measured stick-up of electrode and water level in electrode: Stickup = 0.71' ags, WL = 27.42' btoe (or, 26.71' bgs).

#### **Installation of ERH Multi-phase Extraction (MPE) electrode F5 (incomplete)**

- K&S used their D-120 truck-mounted drilling rig and a 8.25" ID HSA to cut a hole in the asphalt, then used a handauger to advance a pilot hole to 5' bgs to verify clearance of the gas line identified in this area. Then, once natural stratified soils and no gas line encountered, K&S advanced the HSAs with center plug on 3-inch AW rod to 5 feet bgs. K&S POH with the HSA and center plug, installed a wooden plug in the bit, drilling to 39.5 feet bgs. After reaching 25 feet bgs, K&S charged the HSAs with water between flight connections.
- Lithology & PID Readings:
 

<u>DEPTH</u> <u>(ft bgs)</u>	<u>PID</u> <u>(ppm)</u>	<u>LITHOLOGY</u>
0 - 0.1	Not Meas.	Asphalt
0.1 - 0.5	0.1	Gravely SAND, org brn mottled w/dk brn, f-c, sli to mod silty, dry, no odor
0.5 - 1.3	0.0	Gravely SAND, org brn with tr mottled w/dk brn, f-c grn, sli silty, dry, no odor
1.3 - 2.5	0.2	Silty SAND, blk to dk dusky brn, f- grn, sli to mod clayey (low plasticity), sli moist, no odor
2.5 - 3.5	0.1	Silty SAND, dk brn, f-grn, sli clayey (low plasticity), dry to sli moist, no odor
3.5 - 6.0	0.5	Silty SAND, lt to mod org brn, f-grn, dry, no odor
6.0 - 8.0	13.5 - 1.4	SAND, lt to med grayish brn, f-grn, dry, sli odor dec. w/depth
8.0 - 18	0.4 -0.6	SAND, lt yel brn grading med yel brn, f-grn, dry, no odor
18 - 26	0.3 - 0.7	SAND, lt to mod yel brn, f-grn, dry, no odor
26 - 28	8.7 - 18.9	SAND, med gry yel brn, f-m grn, moist becoming wet at base of unit, sli odor
28 - 33	89 - 133	SAND, med brownish greenish gray, f-m grn, wet, staining, strong odor
33 - 37	249 - 208	SAND, med grn gray, f-m grn w/few c-grn (coarser w/depth), wet, staining, strong odor
37 - 39.5	141 - 186	SAND, med grn gray, f-m grn w/few c-grn (coarser w/depth), trace fine gravel, wet, staining, strong odor
- K&S lowered 4-inch diameter black iron Sch 40 pipe with capped bottom inside the HSAs. The bottom 21-foot long joint with vertical 40-slot was lowered into the HSAs first, then an 18.5-foot joint with only the bottom 13.5 feet slotted and a coupler on the bottom was connected to it prior to lower the pipe to the bottom of the boring. The top of slotted

interval ~4.0 feet bgs. A temporary cap was placed on the top of the electrode during installation, but it will be replaced with the appropriate electrode cap with fittings once the entrainment pipe is installed. TRS applied conductive paste on the threads of pipe prior to making all of the connections except the temporary cap on top.

- Before beginning to pull out of the hole (POH) with the HSAs, K&S poured one 50-lb bag of steel shot and two graphite/steel shot mix into the HSAs, and pushed down on the 4" black iron pipe with the rig's auger drive cap to push out the wooden plug in the HSA bit. Mix = 3 50-lb bags of SWS Earth Contact Backfill + 1 50-lb bag of iron shot.
- K&S continued POH with HSAs while pouring 3:1 graphite/steel shot mix into HSAs (keeping mix at least five feet inside HSAs until nearing the prescribed level of 23' bgs). Used 4.5 mixes and brought 3:1 graphite/iron shot to 22 feet bgs. K&S continued POH with HSAs while pouring #4 silica/bluestone sand into HSAs (keeping sand at least eight feet inside HSAs until POH w/HSAs. Required 31 50-lb bags of sand to bring it to 1.0 foot bgs.
- A drip tube was placed in the lead HSA just before it was POH so as the HSA was POH the drip tube settled in the borehole adjacent to the black iron electrode leaving ~0.5 foot of the copper pipe ags.
- David measured the stickup and WL: Stickup = 1.04' ags WL = 27.74' btoe = 26.70' bgs

#### **Installation of ERH Multi-phase Extraction (MPE) electrode E4 (incomplete)**

- K&S used their D-120 truck-mounted drilling rig to advance a pilot hole with 8.25" ID HSAs with center plug on 3-inch AW rod to 5 feet bgs. K&S POH with the HSA and center plug, installed a wooden plug in the bit and resumed drilling with the HSAs to 39.5' bgs. After reaching 25 feet bgs, K&S charged the HSAs with water between flight connections.

- Lithology & PID Readings:

<u>DEPTH</u> <u>(ft bgs)</u>	<u>PID</u> <u>(ppm)</u>	<u>LITHOLOGY</u>
0 - 0.1	Not Meas.	Asphalt
0.1 - 0.5	0.1	Gravely SAND, med to dk org brn, f-m grn w/few c-grn, sli to mod silty, dry, no odor
0.5 - 1.0	0.6	Silty SAND, dk brn, f- grn w/few m-grn, few fine gravel, sli clayey (low plasticity), dry to sli moist, no odor
1.0 - 2.0	0.8	Silty Clayey SAND, dk dusky brn grading to dk org brn, f- grn w/tr m-c grn, sli moist, no odor
2.0 - 3.0	0.3	Silty Gravely SAND, med to dk org brn mottled w/mod yel brn, f-c grn, dry, no odor
3.0 - 18	0.1	Silty SAND, lt yel brn, f-grn, becoming less silty w/depth, dry, no odor
18 - 19	0.3	Silty SAND, mod yel brn, f-grn, dry, no odor
19 - 25	0.1 - 0.8	SAND, lt yel brn, f-grn, sli silty becoming less silty w/depth, dry, no odor
25 - 30	0.8 - 2.1	SAND, lt yel brn, f-grn w/few m-grn, dry w/no odor becoming moist w/sli odor w/depth
30 - 32	49.8 - 155	SAND, lt gry brn, f-grn w/few to some m-grn (coarsening w/depth), moist becoming wet below ~31' bgs, mod to strong odor
32 - 37	246 - 366	SAND, lt to mod brownish gray grading to med greenish gray, f-grn w/few to some m-grn, wet, staining, strong odor
37 - 39.5	398 - 411	SAND, med grn gray, f-m grn w/tr c-grn and tr fine gravel (coarser



w/ depth), wet, staining, strong odor

- K&S lowered 4-inch diameter black iron Sch 40 pipe with capped bottom inside the HSAs. The bottom 21-foot long joint with vertical 40-slot was lowered into the HSAs first, then an 18.5-foot joint with only the bottom 13.5 feet slotted and a coupler on the bottom was connected to it prior to lower the pipe to the bottom of the boring. The top of slotted interval ~4.0 feet bgs. A temporary cap was placed on the top of the electrode during installation, but it will be replaced with the appropriate electrode cap with fittings once the entrainment pipe is installed. TRS applied conductive paste on the threads of pipe prior to making all of the connections except the temporary cap on top.
- Before beginning to pull out of the hole (POH) with the HSAs, K&S poured one 50-lb bag of steel shot and two 3:1 graphite/steel shot mixes into the HSAs, and pushed down on the 4" black iron pipe with the rig's auger drive cap to push out the wooden plug in the HSA bit. Mix = 3 50-lb bags of SWS Earth Contact Backfill + 1 50-lb bag of iron shot.
- K&S continued POH with HSAs while pouring 3:1 graphite/steel shot mix into HSAs (keeping mix at least five feet inside HSAs until nearing the prescribed level of 23' bgs). Used 4.0 mixes and brought 3:1 graphite/iron shot to 22 feet bgs. K&S continued POH with HSAs while pouring #4 silica/bluestone sand into HSAs (keeping sand at least eight feet inside HSAs until POH w/ HSAs. Required 31 50-lb bags of sand to bring it to 1.0 foot bgs.
- A drip tube was placed in the lead HSA just before it was POH so as the HSA was POH the drip tube settled in the borehole adjacent to the black iron electrode leaving ~0.5 foot of the copper pipe ags.
- David measured the stickup and WL: Stickup = 0.88' ags WL = 27.31' btoe = 26.43' bgs

#### **Installation of 10" Diameter CPVC Oversleeves @ 22 of the MPE Locations**

- For each of these twenty-two electrodes, TRS cut a 2.5' long piece of 10" diameter CPVC and lowered it into the annular space around the electrode. Prior to placing the oversleeve in the annular space, TRS placed a piece of visquine on top of the #4 silica/bluestone sandpack to prevent the grout that will be placed inside and around the oversleeve from penetrating into the sandpack.

#### **Additional Notes and Observations:**

- TRS conducted a Health & Safety tailgate meeting in the morning with K&S and CDM Smith personnel.
- TRS conducted a site tour with George Lytwynyshyn of CTS (reportedly, a perspective client of TRS). CDM Smith personnel did not intervene or supervise the site tour, but David was introduced to Mr. Lytwynyshyn during the tour.
- The CME-850 track-mounted drilling rig that has been sitting idle at the site for the last few weeks was picked up by a K&S transport vehicle.

#### **Verbal Communications between CDM Smith and TRS Regarding Concerns or Deficiencies:**

- TRS moved the proposed location of MPE-F5 approximately 1.5 feet south to move the location so it was ~3' from a marked gas line (reportedly disconnected). However, when TRS instructed K&S to drill at the revised location without first advancing a pilot hole with a hand auger, David strongly suggested that a hand augered pilot hole be advanced to 5' bgs prior to drilling to verify subsurface utility clearance. K&S personnel concurred

- and TRS personnel eventually agreed.
- David mentioned to Chris Thomas that CDM Smith and K&S personnel in the field had discussed with TRS personnel onsite that it might be better to use a finer sand material (such as 20/30 Sand also referred to as #5 Sand) for the sandpacks of the groundwater piezometers (GWPs) to reduce the amount of formation material that is flowing into the GWPs during construction and that will possibly continue to accumulate in the GWPs. Chris said he was aware of the discussions, thought it “sounded reasonable” and was going to discuss it further within TRS.

**Potential Work Tomorrow:**

- Tomorrow, K&S will first drill the borehole for and install MPE-F4 with the D-120 rig and TRS will work with K&S personnel to grout the oversleeves that have been (and will be) placed around existing MPEs. Tomorrow, K&S will also continue working to complete the installations of three MPEs (E3, F3, & G2), Temperature Monitoring Point (TMP) F4, Vapor Piezometer (VP) G4, and GWPs F3 and E3 by the end of the week. This will leave VP-L4 and GWP-L4 (which are in front of the bay door of the building), and the remaining installations located in Marshall Street (6 MPEs, 3 VPs, 2 GWPs, & 1 TMP) to be installed next week.



# DAILY ACTIVITY REPORT

**Date:** 8/10/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site  
Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** 72 degrees, partly cloudy, wind is calm. Forecast is for sun & clouds and temperature to go into the mid to upper 80s.

**Report Authors:** David Rojas and Kevin Saller (CDM Smith)

## Personnel/visitors onsite:

**CDM Smith:** David Rojas & Kevin Saller

**TRS:** Jeff Riffe, Brad Morris, & Ted Highley

**K&S Engineers, Inc. (K&S):** Carlos Santana & Jack Zilz

**Visitors:** CH<sub>2</sub>M Hill personnel

## Work Performed Today Onsite by TRS and Contractors for TRS:

### Installation of ERH Multi-phase Extraction (MPE) electrode F4 (incomplete)

- K&S used their Diedrich-120 (D-120) truck-mounted drilling rig and a 8.25" ID hollow stem auger (HSA) with center plug on 3-inch AW rod to advance a pilot hole 5 foot bgs. K&S pulled out of the hole (POH) with the HSA and center plug, installed a wooden plug in the bit, drilling to 40 feet below ground surface (bgs). After reaching 25 feet bgs, K&S charged the HSAs with water between flight connections.

- Lithology & Photoionization Detector (PID) Readings:

DEPTH (ft bgs)	PID (ppm)	LITHOLOGY
0 - 0.1	Not Meas.	Asphalt
0.1 - 1.0	0.0	Gravely SAND, dk red brn mottled w/dk brn, f-c, sli to mod silty, dry, no odor
1.0 - 2.0	0.3	Silty SAND, dk dusky brn grading to dk brn,, f-grn, sli to mod clayey (lo plasticity), sli gravely decreasing w/depth, sli moist, no odor
2.0 - 2.5	0.1	Gravely Silty SAND, dk reddish brn, f-c grn, sli clayey (low plasticity), sli moist, no odor
2.5 - 3.0	0.0	Silty SAND, med org brn, f-grn, dry, no odor
3.0 - 7.0	0.2	Silty SAND, lt yel brn, f-grn, dry, no odor
7.0 - 10	0.1	Silty SAND, lt to med grayish yel brn, f-grn, dry, no odor
10 - 22	0.1	SAND, lt yel brn, f-grn, dry, no odor
22 - 28	0.2	SAND, lt to mod yel brn, f-grn w/few m-grn, dry to sli moist, no odor
28 - 30	0.2	SAND, mod gry brn, f-grn w/few to some m grn, moist becoming wet at base of unit, no odor
30 - 34	0.4 - 31	SAND, med brownish gray, f-m grn w/tr c-grn, wet, sli to mod odor

- |         |           |  |
|---------|-----------|--|
| 34 - 37 | 55 - 81   | SAND, med grn gray, f-m grn w/few c-grn (coarser w/depth), wet, staining, mod odor   |
| 37 - 38 | 153 - 104 | SAND, lt to med greenish gray, f-m grn w/some c-grn (coarser w/depth), wet, spotty staining, strong odor                     |
| 38 - 40 | 189 - 238 | SAND, med to dk greenish gray, f-m grn w/some c-grn (coarser w/depth), few fine to coarse gravel, wet, staining, strong odor |
- K&S lowered 4-inch diameter black iron Sch 40 pipe with capped bottom inside the HSAs. The bottom 21-foot long joint with vertical 40-slot was lowered into the HSAs first, then an 18.5-foot joint with only the bottom 14.5 feet slotted and a coupler on the bottom was connected to it prior to lower the pipe to the bottom of the boring. The top of the slotted interval is 3.38 feet bgs. A temporary cap was placed on the top of the electrode during installation, but it will be replaced with the appropriate electrode cap with fittings once the entrainment pipe is installed. TRS applied conductive paste on the threads of pipe prior to making all of the connections except the temporary cap on top.
  - Before beginning to pull out of the hole (POH) with the HSAs, K&S poured one 50-lb bag of steel shot and two 3:1 graphite/steel shot mixes into the HSAs, and pushed down on the 4" black iron pipe with the rig's auger drive cap to push out the wooden plug in the HSA bit. Mix = 3 50-lb bags of SWS Earth Contact Backfill + 1 50-lb bag of iron shot.
  - K&S continued POH with HSAs while pouring 3:1 graphite/steel shot mix into HSAs (keeping mix at least five feet inside HSAs until nearing the prescribed level of 23' bgs). Used 4.25 mixes and brought 3:1 graphite/iron shot to 22.5 feet bgs. K&S continued POH with HSAs while pouring #4 silica/bluestone sand into HSAs (keeping sand at least eight feet inside HSAs until POH w/HSAs. Required 31 50-lb bags of sand to bring it to 0.5 foot bgs.
  - A drip tube (a 5-foot long 1/2" diameter copper pipe with a stainless steel screen clamped onto the bottom of it) was placed in the lead HSA just before it was POH so as the HSA was POH the drip tube settled in the borehole adjacent to the black iron electrode leaving ~0.5 foot of the copper pipe above ground surface (ags).
  - David measured the stickup and WL: Stickup = 0.62' ags WL = 27.15' btoe = 26.53' bgs

#### **Installation of ERH Multi-phase Extraction (MPE) electrode E3 (incomplete)**

- K&S used their D-120 truck-mounted drilling rig to advance a pilot hole with 8.25" ID HSAs with center plug on 3-inch AW rod to 5 feet bgs. K&S POH with the HSA and center plug, installed a wooden plug in the bit and resumed drilling with the HSAs to 40' bgs. After reaching 25 feet bgs, K&S charged the HSAs with water between flight connections.
- Lithology & PID Readings:

<u>DEPTH</u> <u>(ft bgs)</u>	<u>PID</u> <u>(ppm)</u>	<u>LITHOLOGY</u>
0 - 0.1	Not Meas.	Asphalt
0.1 - 0.8	0.4	Gravely SAND, med to dk brn gry mottled w/lt orangish & yel brn, f-c grn, sli to mod silty, dry, no odor
0.8 - 2.0	0.3	Silty SAND, blk to dk dusky brn, f- grn, sli to mod clayey (low plasticity), dry, no odor
2.0 - 2.5	0.1	Gravely SAND, dk brn, f-c grn, dry, no odor
2.5 - 3.0	0.3	Silty SAND, dk reddish brn, f-m grn, sli clayey (low plasticity), dry, no odor
3.0 - 3.5	0.1	Silty SAND, med org brn, f-grn w/tr to few m-grn, dry, no odor



DEPTH (ft bgs)	PID (ppm)	LITHOLOGY
3.5 - 5.0	0.4	Silty SAND, med to lt yel brn (lighter in color w/ depth), f-grn, dry, no odor
5.0 - 8.0	0.1	Silty SAND, med org brn, f-grn, dry, no odor
8.0 - 18	1.0 - 0.4	SAND, grayish lt yel brn, f-grn, sli silty lenses, dry, no odor
18 - 26	0.7 - 0.3	SAND, grayish lt yel brn, f-grn w/ few m-grn, sli silty lenses, dry becoming moist w/ depth, no odor
26 - 32	0.4 - 22	SAND, med grayish brn, f-grn w/ few to some m-grn, moist becoming wet w/ depth, no odor except bottom of unit has sli odor
32 - 36	48 - 89	SAND, med brn gry grading to med greenish gray, f-m grn w/ tr c-grn (coarsening w/ depth), wet, stained, mod to strong odor
36 - 38	178 - 233	SAND, med greenish gray, f-m grn w/ few to some c-grn, tr f-m gravel, wet, staining, strong odor
38 - 40	332 - 255	SAND, mod to dk greenish gray, f-m grn w/ few to some c-grn, few f-c gravel, wet, staining, strong odor
<ul style="list-style-type: none"> <li>• K&amp;S lowered 4-inch diameter black iron Sch 40 pipe with capped bottom inside the HSAs. The bottom 21-foot long joint with vertical 40-slot was lowered into the HSAs first, then an 18.5-foot joint with only the bottom 14.5 feet slotted and a coupler on the bottom was connected to it prior to lower the pipe to the bottom of the boring. The top of slotted interval ~3.1 feet bgs. A temporary cap was placed on the top of the electrode during installation, but it will be replaced with the appropriate electrode cap with fittings once the entrainment pipe is installed. TRS applied conductive paste on the threads of pipe prior to making all of the connections except the temporary cap on top.</li> <li>• Before beginning to pull out of the hole (POH) with the HSAs, K&amp;S poured one 50-lb bag of steel shot and two 3:1 graphite/steel shot mixes into the HSAs, and pushed down on the 4" black iron pipe with the rig's auger drive cap to push out the wooden plug in the HSA bit. Mix = 3 50-lb bags of SWS Earth Contact Backfill + 1 50-lb bag of iron shot.</li> <li>• K&amp;S continued POH with HSAs while pouring 3:1 graphite/steel shot mix into HSAs (keeping mix at least five feet inside HSAs until nearing the prescribed level of 23' bgs). Used 4.0 mixes and brought 3:1 graphite/iron shot to 21.8 feet bgs. K&amp;S continued POH with HSAs while pouring #4 silica/bluestone sand into HSAs (keeping sand at least eight feet inside HSAs until POH w/ HSAs. Required 31.5 50-lb bags of sand to bring it to 1.0 foot bgs.</li> <li>• A drip tube was placed in the lead HSA just before it was POH so as the HSA was POH the drip tube settled in the borehole adjacent to the black iron electrode leaving ~0.5 foot of the copper pipe ags.</li> <li>• David measured the stickup and WL: Stickup = 0.90' ags WL = 27.21' btoe = 26.31' bgs</li> </ul>		

#### **Installation of ERH Multi-phase Extraction (MPE) electrode F3 (incomplete)**

- K&S used their D-120 drilling rig and their 8.25" ID HSAs (which create a 12.25" diameter hole) with center plug on 1.75-inch AWJ rod to 5 feet bgs. After drilling the 5' pilot hole, they POH with the HSA and center plug, installed a wooden plug in the bit, and resumed drilling w/ the HSAs.

- Lithology & PID Readings at MPE-F3:

DEPTH (ft bgs)	PID (ppm)	LITHOLOGY
0 – 0.1	Not Meas.	ASPHALT
0.1 – 1.0	18.8	Gravely SAND, dk gry brn mottled w/ dk brn, f-c grn, sli to mod silty, dry, sli odor
1.0 – 2.5	9.5	Gravely SAND, blk grading to dk dusky brn, f-grn w/ few m-c grn, sli to mod clayey (low plasticity), sli moist, sli odor
2.5 – 3.5	4.1	Silty SAND, dk reddish brn, f-grn w/ few m-grn, sli clayey (low plasticity), dry to sli moist, tr odor
3.5 – 4.0	3.5	Silty SAND, med org brn, f-grn w/ tr fine gravel, dry, tr odor
4.0 – 12	4.7 – 0.6	Silty SAND, lt yel brn, f-grn, becoming no odor and less silty w/ depth, dry, tr to no odor
12 – 25	0.4* – 0.0	SAND, lt yel brn, f-grn, sli silty lenses, dry, no odor, *(All but one of the samples analyzed in this interval had 0.4 ppm or less except @ 23' bgs = 5.6 ppm)

- K&S ceased advancing 8.25" ID HSAs @ 25 feet bgs because they would not be able to complete the installation of the MPE within their 10-hour work day. TRS and K&S personnel secured the site and SDFN.

#### **Installation of 1" Copper Entrainment Pipes, Electrode Caps, and Cap Fittings @ 3 MPEs**

- For each of these three electrodes, TRS measured the static water level (SWL) in the electrode then constructed entrainment pipes by soldered together sections of 1" diameter copper pipe, cut an angled end on the bottom of the pipe and drilled four air vent holes in the bottom 3.5' of the pipe. The lowest of the vent holes on the entrainment pipe is 1/4" diameter and is ~0.5' from the bottom of the pipe. The second vent hole is 1/4" diameter and is ~1.5' from the bottom of the pipe. The third vent hole is 1/8" diameter and is ~2.5' from the bottom of the pipe. The top vent hole is 1/8" diameter and is ~3.5' from the bottom of the pipe. A threaded coupler was soldered to the top of the pipe.
- The entrainment pipe was then lowered most of the way inside the electrode, screwing it into the bottom of an electrode cap that was then screwed onto the top of the electrode after a conductive paste was applied to the threads. Then, metal fittings were screwed into the top of the cap that will eventually be attached to the vapor recovery piping and multi-phase extraction line. The distance from the bottom of the top plate of the cap and the top of the electrode pipe = 1".
- The following are specific details regarding each of these installations:
  - MPE-E5
    - SWL before entrainment pipe installed = 27.76' below top of electrode
    - Bottom of entrainment pipe = 28.34' below top plate of electrode cap
  - MPE-E4
    - SWL before entrainment pipe installed = 27.45' below top of electrode
    - Bottom of entrainment pipe = 28.03' below top plate of electrode cap
  - MPE-F5
    - SWL before entrainment pipe installed = 28.0' below top of electrode
    - Bottom of entrainment pipe = 28.58' below top plate of electrode cap

#### **Additional Notes and Observations:**

- TRS conducted a Health & Safety tailgate meeting in the morning with K&S and CDM Smith personnel.

- CH<sub>2</sub>M personnel dropped off four steel drums of investigative derived waste (IDW) generated from another IEPA site in Rockford. CH<sub>2</sub>M had already obtained approval from IEPA to temporarily store these drums (which primarily contain cuttings from a soil gas investigation at a site suspected to have solvent contamination) until the sampling activities at the other site are completed and arrangements can be made to properly dispose of the drums. Reportedly, additional IDW material will be added to the existing drums which are being stored on a wooden pallet in the southwest portion of the site within the locked fence. CDM Smith personnel did not observe or supervise the delivery of the IDW drums which took place early this morning prior to the arrival of CDM Smith personnel.
- CDM Smith personnel noticed that TRS had added plastic liner sheets to act as a barrier between the annular space of the MPE wells and the grout that will be placed to hold the oversleeves in place. TRS explained that this barrier was placed to stop grout migration through the #4 sandpack and into the electrodes, some of which have screens starting as high as 3 ft bgs.

### **Verbal Communications between CDM Smith and TRS Regarding Concerns or Deficiencies:**

- In the 8/9/16 Daily Activity Report, it was stated that TRS moved the proposed location of MPE-F5 approximately 1.5 feet south to move the location so it was ~3' from a marked gas line (reportedly disconnected). However, today, after a closer inspection, it was observed that the location had actually been moved approximately 3' south.
- David asked Jeff Riffe if he had heard any results regarding the potential for using a finer sand than the #4 silica/bluestone sand (such as 20/40 or #5 Sand) to build the sandpacks for the remaining five groundwater piezometers (GWPs) (two of which are scheduled to be installed this week). Jeff stated that he had not received any instructions to post-pone installing the remaining GWPs or to revise the proposed construction procedures.

### **Potential Work Tomorrow:**

- Tomorrow, K&S will complete drilling the borehole for and install MPE-F3 with the D-120 rig and TRS will work with K&S personnel to grout the oversleeves that have been (and will be) placed around existing MPEs. Tomorrow and Friday, K&S will also attempt to complete the installations of MPE-G2, Temperature Monitoring Point (TMP) F4, Vapor Piezometer (VP) G4, and GWPs F3 and E3. This will leave VP-L4 and GWP-L4 (which are in front of the bay door of the building), and the remaining installations located in Marshall Street (6 MPEs, 3 VPs, 2 GWPs, & 1 TMP) to be installed next week.



# DAILY ACTIVITY REPORT

**Date:** 8/11/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** 76 degrees, clear with slight fog, wind is 3-8 mph S. Forecast is for sun & clouds and temperature to go into the mid 90s.

**Report Authors:** David Rojas and Kevin Saller (CDM Smith)

**Personnel/visitors onsite:**

**CDM Smith:** David Rojas & Kevin Saller

**TRS:** Jeff Riffe, Brad Morris, & Ted Highley

**K&S Engineers, Inc. (K&S):** Carlos Santana & Jack Zilz

**Visitors:** None

**Work Performed Today Onsite by TRS and Contractors for TRS:**

**Installation of ERH Multi-phase Extraction (MPE) electrode F3 (incomplete)**

- K&S used their Diedrich-120 (D-120) truck-mounted drilling rig to resumed advancing 8.25" ID hollow stem augers (HSAs) with a wooden plug in the bit, drilling to 40 feet below ground surface (bgs). K&S had already drilled to 25 feet bgs on 8/10/16. K&S charged the HSAs with water between flight connections.
- Lithology & Photoionization Detector (PID) Readings:

DEPTH (ft bgs)	PID (ppm)	LITHOLOGY
25 - 29	0.4 - 0.8	SAND, grayish lt yel brn, f-grn, moist, no odor
29 - 33	0.9 - 1.2	SAND, grayish lt yel brn mottled w/mod brn gray, f-grn w/few m-grn, wet, spotty staining, sli odor
33 - 35	33 - 49	SAND, lt grayish yel brn grading to med brn gray, f-m grn, wet, stained, mod to strong odor
35 - 38	125 - 111	SAND, med greenish gry, f-m grn w/tr to few c-grn, tr fine gravel, wet, stained, strong odor
38 - 40	245 - 134	SAND, med to dark greenish gry, f-m grn w/some c-grn, few f-c gravel, wet, stained, strong odor
- K&S lowered 4-inch diameter black iron Sch 40 pipe with capped bottom inside the HSAs. The bottom 21-foot long joint with vertical 40-slot was lowered into the HSAs first, then an 18.5-foot joint with only the bottom 14.5 feet slotted and a coupler on the bottom was connected to it prior to lower the pipe to the bottom of the boring. The top of slotted interval ~3.2 feet bgs. A temporary cap was placed on the top of the electrode during installation, but it will be replaced with the appropriate electrode cap with fittings once the entrainment pipe is installed. TRS applied conductive paste on the threads of pipe prior to making all of the connections except the temporary cap on top.
- Before beginning to pull out of the hole (POH) with the HSAs, K&S poured one 50-lb bag of steel shot and 2.5 3:1 graphite/steel shot mixes into the HSAs, and pushed down on the

4" black iron pipe with the rig's auger drive cap to push out the wooden plug in the HSA bit. Mix = 3 50-lb bags of SWS Earth Contact Backfill + 1 50-lb bag of iron shot.

- K&S continued POH with HSAs while pouring 3:1 graphite/steel shot mix into HSAs (keeping mix at least five feet inside HSAs until reaching the prescribed level of 23' bgs). Required 4.75 mixes to bring 3:1 graphite/iron shot to 23 feet bgs. K&S continued POH with HSAs while pouring #4 silica/bluestone sand into HSAs (keeping sand at least 5 feet inside HSAs until POH w/HSAs. Required 35 50-lb bags of sand to bring it to 0.5 foot bgs.
- A drip tube (a 5-foot long 1/2" diameter copper pipe with a stainless steel screen clamped onto the bottom of it) was placed within the annular sand in the lead HSA just before it was POH so as the HSA was POH the drip tube settled in the borehole adjacent to the black iron electrode. The drip tube was subsequently adjusted so that the top of the drip tube ended up ~0.5' above ground surface (ags).
- David measured stick-up of electrode and water level in electrode: Stickup = 0.82' ags, WL = 27.20' btoe (or, 26.38' bgs).

#### **Installation of ERH Multi-phase Extraction (MPE) electrode G2 (incomplete)**

- K&S used their D-120 truck-mounted drilling rig and a 8.25" ID HSA with center plug on 3-inch AW rod to 5 feet bgs. K&S POH with the HSA and center plug, installed a wooden plug in the bit, then drilled to 40 feet bgs. After reaching 25 feet bgs, K&S charged the HSAs with water between flight connections.
- Lithology & PID Readings:
 

<u>DEPTH</u> <u>(ft bgs)</u>	<u>PID</u> <u>(ppm)</u>	<u>LITHOLOGY</u>
0 - 0.1	Not Meas.	Asphalt
0.1 - 0.5	0.1	Gravely SAND, med brn mottled w/dk brn, f-c, sli to mod silty, dry, no odor
0.5 - 2.0	0.3	Gravely Clayey SAND, blk to dk dusky brn, f-m grn w/few c-grn, finer and less gravely w/depth, sli silty, dry to sli moist, no odor
2.0 - 2.5	0.1	Gravely Silty SAND, dk brn, f-grn, sli clayey (low plasticity), dry to sli moist, no odor
2.5 - 3.0	0.0	Silty SAND, dk reddish brn, f-grn, sli clayey (low plasticity), dry, no odor
3.0 - 4.0	0.4	Silty SAND, med org brn, f-grn, dry, no odor
4.0 - 5.0	0.3	Silty SAND, lt yel brn, f-grn, dry, no odor
5.0 - 6.0	0.1	Silty SAND, med grayish yel brn mottled w/dk brn, f-grn, dry, no odor
6.0 - 12	1.5 - 0.4	SAND, lt grayish yel brn, f-grn, dry, no odor
12 - 27	0.3 - 0.5	SAND, lt yel brn becoming lighter in color w/depth, f-grn, dry to sli moist at bottom of unit, no odor
27 - 33	0.4 - 0.1	SAND, lt to med gry yel brn, f-grn w/few m-grn, moist becoming wet, no odor
33 - 36	0.0 - 0.4	SAND, med yel brownish gray, f-m grn, wet, no odor
36 - 38	0.0 - 0.3	SAND, med gray yel brn, f-m grn w/tr to few c-grn (coarser w/depth), wet, no odor
38 - 40	0.5 - 0.0	SAND, med gray yel brn, f-m grn w/tr to few c-grn (coarser w/depth), tr to few f-m gravel inc. w/depth, wet, no odor
- K&S lowered 4-inch diameter black iron Sch 40 pipe with capped bottom inside the HSAs. The bottom 21-foot long joint with vertical 40-slot was lowered into the HSAs first, then

an 18.5-foot joint with only the bottom 14.5 feet slotted and a coupler on the bottom was connected to it prior to lower the pipe to the bottom of the boring. The top of slotted interval ~3.2 feet bgs. A temporary cap was placed on the top of the electrode during installation, but it will be replaced with the appropriate electrode cap with fittings once the entrainment pipe is installed. TRS applied conductive paste on the threads of pipe prior to making all of the connections except the temporary cap on top.

- Before beginning to POH with the HSAs, K&S poured one 50-lb bag of steel shot and 2.25 3:1 graphite/steel shot mixes into the HSAs, and pushed down on the 4" black iron pipe with the rig's auger drive cap to push out the wooden plug in the HSA bit. Mix = 3 50-lb bags of SWS Earth Contact Backfill + 1 50-lb bag of iron shot.
- K&S continued POH with HSAs while pouring 3:1 graphite/steel shot mix into HSAs (keeping mix at least five feet inside HSAs until nearing the prescribed level of 23' bgs). Used 4.25 mixes and brought 3:1 graphite/iron shot to 22.7 feet bgs. K&S continued POH with HSAs while pouring #4 silica/bluestone sand into HSAs (keeping sand at least eight feet inside HSAs until POH w/HSAs. Required 32 50-lb bags of sand to bring it to 0.5 foot bgs.
- A drip tube was placed in the lead HSA just before it was POH so as the HSA was POH the drip tube settled in the borehole adjacent to the black iron electrode leaving ~0.5 foot of the copper pipe ags.
- David measured the stickup and WL: Stickup = 0.83' ags WL = 27.23' btoe = 26.40' bgs

#### **Installation of ERH Vapor Piezometer (VP)-G4 (incomplete)**

- K&S used their D-120 truck-mounted drilling rig to advance a pilot hole with 4.25" ID HSAs (which create a 7.88" diameter hole) with center plug on 1.75-inch AWJ rods to 5' bgs. K&S POH with the HSA and center plug, installed a wooden plug in the bit, then drilled to 15 feet bgs. TRS personnel lowered the pre-assembled 14.04-foot long VP in the HSAs which consisted of 2.5' of 1.5" diameter stainless-steel (SS) wire-wrapped screen, 5.75' of 1.5" diameter SS riser, and 5.75' of 1.5" diameter CPVC pipe. The additional 0.04' of length of the VP is due to the coupling between the SS riser and the CPVC pipe.
- After pushing down on the VP to push out the wooden plug, the HSAs were POH. Then, K&S began dumping #4 silica/bluestone sand in the annulus while holding the VP so the top would be approximately one foot ags. After dumping 5 50-lb bags of #4 sand into the annulus, the top of the sandpack was at 7.5' bgs.
- The top of the VP is at 0.75' ags, so the screened interval is at 10.79 – 13.29 feet bgs.
- K&S poured neat cement into the annulus, filling the remainder of the annulus to the surface. They had mixed 5 94-lb bags of Type I Portland cement w/25 gallons of water, and there was still ~15 gallons of grout left in the mixing drum.

#### **Installation of ERH Temperature Monitoring Point (TMP)-F4 (incomplete)**

- K&S used their D-120 truck-mounted drilling rig to advance a pilot hole with 4.25" inside diameter (ID) HSAs (which create a 7.88" diameter hole) with center plug on 1.75-inch AWJ rod to 5 feet bgs. K&S POH with the HSA and center plug, installed a wooden plug in the bit, and drilled to 25 feet bgs.
- K&S ceased advancing 4.25" ID HSAs @ 25 feet bgs because they would not be able to complete the installation of the TMP within their 10-hour work day. TRS and K&S personnel secured the site and SDFN.



### **Installation of 1" Copper Entrainment Pipes, Electrode Caps, and Cap Fittings @ 2 MPEs**

- For each of these three electrodes, TRS measured the static water level (SWL) in the electrode then constructed entrainment pipes by soldered together sections of 1" diameter copper pipe, cut an angled end on the bottom of the pipe and drilled four air vent holes in the bottom 3.5' of the pipe. The lowest of the vent holes on the entrainment pipe is 1/4" diameter and is ~0.5' from the bottom of the pipe. The second vent hole is 1/4" diameter and is ~1.5' from the bottom of the pipe. The third vent hole is 1/8" diameter and is ~2.5' from the bottom of the pipe. The top vent hole is 1/8" diameter and is ~3.5' from the bottom of the pipe. A threaded coupler was soldered to the top of the pipe.
- The entrainment pipe was then lowered most of the way inside the electrode, screwing it into the bottom of an electrode cap that was then screwed onto the top of the electrode after a conductive paste was applied to the threads. Then, metal fittings were screwed into the top of the cap that will eventually be attached to the vapor recovery piping and multi-phase extraction line. The distance from the bottom of the top plate of the cap and the top of the electrode pipe = 1".
- The following are specific details regarding each of these installations:
  - MPE-E3
    - SWL before entrainment pipe installed = 27.24' below top of electrode
    - Bottom of entrainment pipe = 27.82' below top plate of electrode cap
  - MPE-F4
    - SWL before entrainment pipe installed = 27.16' below top of electrode
    - Bottom of entrainment pipe = 27.74' below top plate of electrode cap

### **Installation of Grouting for the 10" Diameter Oversleeves @ 5 MPE Locations**

- Oversleeves were first cut from 10" diameter CPVC pipe in 2.5' long sections to be placed over the exposed portion of the MPE wells at the surface. Prior to placing the 10" CPVC oversleeve, TRS placed a piece of visquine on top of the exposed #4 sandpack to prevent penetration of the grout into the sandpack. A layer of grout was added from the top of the sandpack on MPE-J5, -J4, -K6, -H4, and -M5 to ground surface. The grout was mixed with 25-gallons of water and 5, 94 pound bags of Portland Type 1 cement..

### **Additional Notes and Observations:**

- TRS conducted a Health & Safety tailgate meeting in the morning with K&S and CDM Smith personnel.

### **Verbal Communications between CDM Smith and TRS Regarding Concerns or Deficiencies:**

- None.

### **Potential Work Tomorrow:**

- Tomorrow, K&S will complete drilling the borehole for and install TMP-F4 with the D-120 rig and TRS will work with K&S personnel to grout additional oversleeves that have been (and will be) placed around existing MPEs. This will leave VP-L4 and groundwater piezometers (GWPs)-F3, GWP-E3, and GWP-L4, and the remaining installations located in Marshall Street (6 MPEs, 3 VPs, 2 GWPs, & 1 TMP) to be installed next week.

# DAILY ACTIVITY REPORT

**Date:** 8/12/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** Temperature is 72 degrees, sky is overcast, and wind is calm. Forecast is for rain with occasional thunderstorms and the high temperature to only get into the low 80s.

**Report Author:** David Rojas (CDM Smith)

**Personnel/visitors onsite:**

**CDM Smith:** David Rojas and Kevin Saller

**TRS:** Brad Morris & Jeff Riffe

**K&S Engineers, Inc. (K&S):** Carlos Santana & Jack Zilz

**Visitors:** Jim Malison (CH<sub>2</sub>M Hill)

**Work Performed Today Onsite by TRS and Contractors for TRS:**

**Installation of ERH Temperature Monitoring Point (TMP)-K5 (incomplete)**

- K&S used their Diedrich 120 (D-120) truck-mounted drilling rig to continue advancing 4.25" inside diameter (ID) hollow-stem augers (HSAs) (which create a 7.88" diameter hole) with a wooden plug in the bit to 39 feet bgs, charging the HSAs with water between flight connections.
- K&S personnel used the Moyno pump on the D-120 to mix two batches of neat cement in two 55-gallon drums. Each batch consisted of 5 94-lb bags of Portland Type I cement and 30 gallons of water. Then, K&S lowered open-ended 1.75-inch diameter AWJ rods in the HSAs and tagged the wooden plug @ ~39 feet bgs. K&S charged the HSAs with water, used the rods to push the wooden plug out of the HSAs, then pulled out of the augers (POA) with the rods. K&S and TRS personnel lowered two 20-foot sections of 1.25" diameter copper pipe in the HSAs, soldering the coupler between the two sections.
- Before beginning to POH with the HSAs, K&S filled the HSAs with neat cement grout and used an 1.75-inch diameter AWJ rod to hold the copper pipe of the TMP in place.
- K&S continued POH with HSAs while pouring more grout into HSAs (keeping the downhole HSAs full of grout until the last flight was POH). K&S mixed two more batches of neat cement (3<sup>rd</sup> mix = 4.5 bags of Portland + 25 gal water; 4<sup>th</sup> mix = 5 bags of Portland + 30 gal water) while POH with HSAs. A total of 19.5 94-lb bags of Type I Portland cement was mixed and it took all but ~10 gallons of the grout to bring grout to the surface. The top of the copper pipe is 1.25' ags. The bottom of the pipe is at 38.75' bgs.
- K&S and TRS personnel cleaned up the equipment and secured the site in preparation for leaving for the weekend break.

**Additional Notes and Observations:**

- TRS conducted a Health & Safety tailgate meeting in the morning with K&S and CDM Smith personnel.

- CH<sub>2</sub>M Hill representative Jim Malison and Terra Probe personnel working under his direction were onsite first thing this morning placing investigative derived waste (IDW) materials (lexane sleeves, decontamination water, soil cuttings, and soil impacted from a hydraulic oil spill) in labeled steel 55-gallon drums being stored at this site. Terra Probe personnel added a fifth drum to the stockpile of drums being stored on wooden pallets inside the locked fenced in area. The IDW was generated offsite at a S.E. Rockford Superfund Site.

**Verbal Communications between CDM Smith and TRS Regarding Concerns or Deficiencies:**

- None.

**Potential Work Next Week:**

- Next Monday, K&S will drill the boreholes for and install groundwater piezometers (GWPs)-F3 & GWP-E3. Once these two GWPs are installed, the only two remaining installations requiring drilling on the property are the vapor piezometer VP-L4 and the groundwater piezometer GWP-L4, both of which are in front of the south bay door of the site building (primary access to the equipment/supplies staging area inside the building). These two installations will therefore be postponed until all other drilling is complete. So, after GWP-F3 and GWP-E3 are installed, K&S will complete the remaining installations located in Marshall Street (6 MPEs, 3 VPs, 2 GWPs, & 1 TMP) before installing VP-L4 and GWP-L4. The amount of time to complete the remaining drilling activities is estimated to be 6 full days. Therefore, it is unlikely that the drilling activities will be completed next week.



# DAILY ACTIVITY REPORT

**Date:** 8/15/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** 76 degrees, partly cloudy, calm wind. Forecast is for a chance of brief afternoon showers and the temperature to go into the mid to upper 80s.

**Report Author:** David Rojas & Kevin Saller (CDM Smith)

**Personnel/visitors onsite:**

**CDM Smith:** David Rojas & Kevin Saller

**TRS:** Brad Morris, Tim Black, & Ted Highley

**K&S Engineers, Inc. (K&S):** Carlos Santana & Jack Zilz

**Visitors:** None

**Work Performed Today Onsite by TRS and Contractors for TRS:**

**Installation of ERH Groundwater Piezometer (GWP)-E3 (incomplete)**

- K&S used their Diedrich-120 (D-120) truck-mounted drilling rig to advance a pilot hole with 4.25" inside diameter (ID) hollow stem augers (HSAs) (which create a 7.88" diameter hole) with center plug on 1.75-inch AWJ rod to 5 feet below ground surface (bgs). K&S POH with the HSA and center plug, installed a wooden plug in the bit, and drilled to 47 feet bgs. K&S charged the HSAs with water between flight connections. The highest PID reading measured obtained from soil cuttings was 145 ppm from cuttings brought to the surface on the flights of the augers after spinning the augers for ~3 minutes after reaching a depth of 37' bgs. The PID reading obtained from cuttings brought to the surface after reaching the total depth of 47 feet and spinning the augers for ~3 minutes was 85 ppm.
- After advancing the HSAs to 47' bgs, K&S lowered 1.75" diameter AWJ rods inside the HSAs to 45' bgs and flushed the HSAs [no water or sand was brought to the surface during flushing]. Then, K&S bumped the wooden plug, POH w/rods, poured 0.5 bag of #4 silica/bluestone to backfill the borehole from 47 to 45 feet bls, and, with help from TRS personnel, lowered the stainless-steel (SS) material for the GWP in the HSAs. From bottom to top, these 2" diameter materials include a SS cap, 5' long SS riser (sump), SS coupler, 10' long SS V-wrapped 20-slot well screen, SS coupler, 10' long SS V-wrapped 20-slot well screen, SS coupler, 10' long SS riser, SS coupler, and a 10' long SS riser. TRS personnel applied Teflon tape to the threads at each connection. Although this would appear to be 45 feet of materials, due to the cap, couplers and exposed threads, the total length of the SS materials for the GWP is 47.6 feet.
- Once K&S completed lowering the SS materials for the GWP in the HSAs, they began slowly pouring #4 silica/bluestone sand into HSAs to set a sandpack in the annulus while picking up (PU) and POH w/HSAs (keeping sand at least one foot inside HSAs. While PU the HSAs, the SS GWP materials also rose over one foot. After multiple attempts to PU the HSAs while holding the SS materials down using a 5' long section of the rods

wedged between the top of GWP and the auger head of the rig failed, K&S obtained approval from TRS to pull the SS materials out of the HSAs, lower the rods back in the hole, flush the HSAs, then POH with the rods and re-lower the SS materials back in the HSAs and attempt to construct the sandpack. This worked.

- The following are some construction details for GWP-E3:
  - Top of SS materials = 2.6' ags
  - Bottom of SS materials = 45' bgs
  - Screened Interval = 19' bgs to 39.5' bgs
  - Top of Sandpack = 16' bgs
- Required 16 50-lb bags of #4 silica/bluestone sand to bring it to 16 feet bgs in the annulus.
- K&S poured grout into the HSAs while finishing POH, filling the remainder of the annulus up to approximately land surface. Required 5 94-lb bags of Type I Portland cement to bring grout to ground surface.

#### **Preparation of 1" Copper Entrainment Pipes and Electrode Caps for 2 MPEs**

- For these two electrodes, TRS measured the static water level (SWL) in the electrode pipe then constructed entrainment pipes by soldered together sections of 1" diameter copper pipe, cut an angled end on the bottom of the pipe and drilled four air vent holes in the bottom 3.5' of the pipe. The lowest of the vent holes on the entrainment pipe is 1/4" diameter and is ~0.5' from the bottom of the pipe. The second vent hole is 1/4" diameter and is ~1.5' from the bottom of the pipe. The third vent hole is 1/8" diameter and is ~2.5' from the bottom of the pipe. The top vent hole is 1/8" diameter and is ~3.5' from the bottom of the pipe. A threaded coupler was soldered to the top of the pipe.
- The following are specific details regarding each of these entrainment pipes:
  - MPE-F3
    - SWL before entrainment pipe installed = 27.09' below top of electrode
    - Bottom of entrainment pipe = 27.67' below top plate of electrode cap
  - MPE-G2
    - SWL before entrainment pipe installed = 27.19' below top of electrode
    - Bottom of entrainment pipe = 27.77' below top plate of electrode cap
- These entrainment pipes and caps will be installed on the MPE wells once the drill rig is safely out of the way, which will most likely happen on Tuesday, 8/16/16.

#### **Installation of Grouting for the 10" Diameter Oversleeves @ 5 MPE Locations**

- Oversleeves were first cut from 10" diameter CPVC pipe in 2.5' long sections to be placed over the exposed portion of the MPE wells at the surface. Prior to placing the 10" CPVC oversleeve, TRS placed a piece of visquine on top of the exposed #4 sandpack to prevent penetration of the grout into the sandpack. A layer of grout was added from the top of the sandpack on MPE-J6, -H5 -H6, -G3, -G4, -G5, -F4, -E5, -L4, and -L5 to ground surface. The grout was mixed with 25-gallons of water and 5, 94 pound bags of Portland Type 1 cement.

#### **Additional Notes and Observations:**

- TRS conducted a Health & Safety tailgate meeting in the morning with K&S and CDM Smith personnel.
- After moving the rig to the original proposed location for GWP-F3, it was decided that since this location would put the mast of the drill rig at ~9 feet from the overhead power lines, the location for GWP-F3 would be moved 1.0 foot due east from the original point.

**Verbal Communications between CDM Smith and TRS Regarding Concerns or Deficiencies:**

- None

**Potential Work Tomorrow:**

- K&S will install GWP-F3 with the D-120 rig and then move the rig into Marshall Street and resume installations in this area.



# DAILY ACTIVITY REPORT

**Date:** 8/16/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site  
Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** 72 degrees, clear sky, 1-3 mph SW wind. Forecast is for a chance of brief afternoon showers and the temperature to go into the mid to upper 80s.

**Report Authors:** David Rojas & Kevin Saller (CDM Smith)

**Personnel/visitors onsite:**

**CDM Smith:** David Rojas & Kevin Saller

**TRS:** Brad Morris, Tim Black, & Ted Highley

**K&S Engineers, Inc. (K&S):** Carlos Santana & Jack Zilz

**Visitors:** None

**Work Performed Today Onsite by TRS and Contractors for TRS:**

**Installation of ERH Groundwater Piezometer (GWP)-F3 (incomplete)**

- K&S used their Diedrich-120 (D-120) truck-mounted drilling rig to advance a pilot hole with 4.25" inside diameter (ID) hollow stem augers (HSAs) (which create a 7.88" diameter hole) with center plug on 1.75-inch AWJ rod to 5 feet below ground surface (bgs). K&S POH with the HSA and center plug, installed a wooden plug in the bit, and drilled to 47 feet bgs. K&S charged the HSAs with water between flight connections.

- Lithology & Photoionization Detector (PID) Readings:

DEPTH (ft bgs)	PID (ppm)	LITHOLOGY
0 - 0.1	Not Meas.	ASPHALT
0.1 - 2.0	0.0	Gravely Clayey SAND, dk dusky brn, f-m grn, clay is high plasticity, sli moist, no odor
2.0 - 2.5	0.0	Gravely Silty SAND, med yel brn mottled w/dk yel brn, f-grn, sli clayey w/high plasticity, sli moist, no odor
2.5 - 3.5	0.0	Silty SAND, lt to mod orangish brn, f-grn, dry, no odor
3.5 - 9.0	0.0	Silty SAND, lt yel brn, f-grn, dry, no odor
9.0 - 18	0.1	SAND, lt yel brn, f-grn, sli silty, dry, no odor
18 - 21	0.4 - 0.2	SAND, lt to mod yel brn, f-grn w/few m-grn, dry, no odor
21 - 24	0.1 - 0.2	SAND, lt yel brn, f-grn, dry, no odor
24 - 33	0.2 - 0.4	SAND, lt to mod grayish yel brn, f-grn w/few to some m-grn, dry becoming moist w/depth, no odor
33 - 35	9.4 - 21	SAND, lt to mod grayish yel brn, f-m grn, wet, sli to mod odor, becoming grayer and more odorous with depth
35 - 41	48 - 85	SAND, med brownish gray, f-m grn, stained, wet, mod to strong odor
41 - 45	119 - 104	SAND, med brownish gray, f-m grn w/tr to few c-grn, stained, wet, strong odor

## Lithology & PID Readings (cont)

DEPTH PID

(ft bgs) (ppm) LITHOLOGY

45 - 47 87 - 73 SAND, med brownish gray, f-m grn w/few to some c-grn, tr rounded f-m sized gravel, spotty staining, mod to strong odor, wet

increased amt of dk mineral grains compared to units above, stained, strong odor, wet, PID = 208 from cuttings on bottom flight of lead HSA after POH

- After advancing the HSAs to 47' bgs, K&S lowered 1.75" diameter AWJ rods inside the HSAs to 45' bgs and flushed the HSAs [no water or sand was brought to the surface during flushing]. Then, K&S bumped the wooden plug, POH w/rods, poured 0.5 bag of #4 silica/bluestone, and lowered the stainless-steel (SS) material for the GWP in the HSAs. From bottom to top, these 2" diameter materials include a SS cap, 5' long SS riser (sump), SS coupler, 10' long SS V-wrapped 20-slot well screen, SS coupler, 10' long SS V-wrapped 20-slot well screen, SS coupler, 10' long SS riser, SS coupler, and a 10' long SS riser. TRS personnel had applied Teflon tape to the threads at each connection. Although this would appear to be 45 feet of materials, due to the cap, couplers and exposed threads, the total length of the SS materials for the GWP is 47.6 feet.
- Once K&S completed lowering the SS materials for the GWP in the HSAs, they began slowly pouring #4 silica/bluestone sand into HSAs to set a sandpack in the annulus while picking up (PU) and POH w/HSAs (keeping sand at least one foot inside HSAs).
- The following are some construction details for GWP-E3:
  - Top of SS materials = 2.06' ags
  - Bottom of SS materials = 45.54' bgs
  - Screened Interval = 19.54' bgs to 40.04' bgs
  - Top of Sandpack = 16' bgs
  - Amount of Material (sand?) inside SS materials = 0.37 feet
- Required 16 50-lb bags of #4 silica/bluestone sand to bring it to 16 feet bgs in the annulus.
- K&S poured grout into the HSAs while finishing POH, filling the remainder of the annulus up to approximately land surface. Required 6 94-lb bags of Type I Portland cement to bring grout to ground surface.

## Installation of ERH Vapor Piezometer (VP)-D4 (incomplete)

- K&S used their D-120 truck-mounted drilling rig and the 4.25" ID HSA with a bit on the bottom to cut a hole in the 0.5' thick asphalt surface of Marshall Street at the proposed location of VP-D4. Then, a pilot hole was advanced to 5' bgs using a hand auger to verify subsurface utility clearance. The material encountered from below the asphalt to 5' bgs was well compacted limerock backfill to approximately 4.3' bgs and dark brown gravelly sand from there to 5' bgs. Then, 4.25" ID HSAs (which create a 7.88" diameter hole) with a center plug on a 1.75-inch AWJ rod was advanced to 5' bgs. K&S POH with the HSA and center plug, installed a wooden plug in the bit, then drilled to 15 feet bgs. TRS personnel lowered the pre-assembled 14.17-foot long VP in the HSAs which consisted of 2.5' of 1.5" diameter stainless-steel (SS) wire-wrapped screen, 5.75' of 1.5" diameter SS riser, and 5.75' of 1.5" diameter CPVC pipe. The additional 0.17' of length of the VP is due to the coupling between the SS riser and the CPVC pipe.
- After pushing down on the VP to push out the wooden plug, the HSAs were POH. Then, K&S began dumping #4 silica/bluestone sand in the annulus while holding the VP so the top would be approximately one foot ags. After dumping 4.25 50-lb bags of #4 sand into the annulus, the top of the sandpack was at 8.0' bgs.
- The top of the VP was at 1.17' ags, so the screened interval is at 10.5 - 13.0 feet bgs.

- K&S poured neat cement into the annulus, filling the annulus to 4' bgs using approximately  $\frac{3}{4}$  of a mix of grout consisting of 2 94-lb bags of Type I Portland cement w/10 gallons of water, and there was still ~5 gallons of grout left in the mixing drum.

#### **Installation of ERH Temperature Monitoring Point (TMP)-D3 (incomplete)**

- K&S used their D-120 truck-mounted drilling rig and the 4.25" ID HSA with a bit on the bottom to cut a hole in the 0.5' thick asphalt surface of Marshall Street at the proposed location of VP-D4. Then, a pilot hole was advanced to 5' bgs using a hand auger to verify subsurface utility clearance. The material encountered from below the asphalt to 5' bgs was well compacted limerock backfill to approximately 4' bgs and dark brown gravely sand from there to 5' bgs. Then, the 4.25" ID HSA with bit (which create a 7.88" diameter hole) with a center plug on a 1.75-inch AWJ rod was advanced to 5' bgs. K&S POH with the HSA and center plug, installed a wooden plug in the bit, then drilled to 24.5 feet bgs.
- K&S ceased advancing the 4.25" ID HSAs @ 24.5 feet bgs because they would not be able to complete the installation of the TMP within their 10-hour work day. TRS and K&S personnel secured the site and SDFN.

#### **Installation of 1" Copper Entrainment Pipes and Electrode Caps for 2 MPEs**

- For these two electrodes, TRS measured the static water level (SWL) in the electrode pipe then constructed entrainment pipes by soldered together sections of 1" diameter copper pipe, cut an angled end on the bottom of the pipe and drilled four air vent holes in the bottom 3.5' of the pipe. The lowest of the vent holes on the entrainment pipe is  $\frac{1}{4}$ " diameter and is ~0.5' from the bottom of the pipe. The second vent hole is  $\frac{1}{4}$ " diameter and is ~1.5' from the bottom of the pipe. The third vent hole is  $\frac{1}{8}$ " diameter and is ~2.5' from the bottom of the pipe. The top vent hole is  $\frac{1}{8}$ " diameter and is ~3.5' from the bottom of the pipe. A threaded coupler was soldered to the top of the pipe.
- The entrainment pipe was then lowered most of the way inside the electrode, screwing it into the bottom of an electrode cap that was then screwed onto the top of the electrode after a conductive paste was applied to the threads. Then, metal fittings were screwed into the top of the cap that will eventually be attached to the vapor recovery piping and multi-phase extraction line. The distance from the bottom of the top plate of the cap and the top of the electrode pipe = 1".
- The following are specific details regarding each of these entrainment pipes:
  - MPE-F3
    - SWL before entrainment pipe installed = 27.09' below top of electrode
    - Bottom of entrainment pipe = 27.67' below top plate of electrode cap
  - MPE-G2
    - SWL before entrainment pipe installed = 27.19' below top of electrode
    - Bottom of entrainment pipe = 27.77' below top plate of electrode cap

#### **Installation of Grouting for the 10" Diameter Oversleeves @ 5 MPE Locations**

- Oversleeves were first cut from 10" diameter CPVC pipe in 2.5' long sections to be placed over the exposed portion of the MPE wells at the surface. Prior to placing the 10" CPVC oversleeve, TRS placed a piece of visquine on top of the exposed #4 sandpack to prevent penetration of the grout into the sandpack. A layer of grout was added from the top of the sandpack on MPE-H3, -H2, -G3, -G2, -F5, -F3, -E3, -J3, and -K3 to ground surface.

#### **Additional Notes and Observations:**

- TRS conducted a Health & Safety tailgate meeting in the morning with K&S and CDM



Smith personnel.

- After moving the rig to the original proposed location for TMP-D3, it was decided that since this location put the drill rig at 9 feet from the overhead power lines, the location for TMP-D3 would be moved 1.0 feet due west from the original proposed location.

### **Verbal Communications between CDM Smith and TRS Regarding Concerns or Deficiencies:**

- CDM Smith and K&S personnel suggested to TRS personnel that it might be more efficient for the remaining proposed locations where drilling is to be performed in Marshall Street to be cleared using air knifing as it is very time consuming to hand auger through 4+ feet of compacted limerock gravel that appears to be present under the asphalt.

### **Potential Work Tomorrow:**

- Tomorrow K&S will use the D-120 drill rig to complete drilling the borehole for and install TMP-D3 and hopefully at least one of the other appurtenances that remain to be installed in Marshall Street. The subsurface appurtenances that remain to be installed using the drill rig include 6 MPEs, 2 VPs, 2 GWPs, & 1 TMP in Marshall Street and VP-L4 & GWP-L4 outside the bay door of the building onsite. TRS will continue to build surface completion assemblies for the MPEs and VPs.

# DAILY ACTIVITY REPORT

**Date:** 8/17/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** 72 degrees, partly cloudy, 2 – 5 mph SW wind. Chance for late morning/afternoon brief showers and temperatures to go into the mid 80s.

**Report Authors:** David Rojas and Kevin Saller (CDM Smith)

## **Personnel/visitors onsite:**

**CDM Smith:** John Grabs, David Rojas, & Kevin Saller

**TRS:** Brad Morris, Ted Highley, & Tim Black

**K&S Engineers, Inc. (K&S):** Carlos Santana & Jack Zilz

**Visitors:** None

## **Work Performed Today Onsite by TRS and Contractors for TRS:**

### **Installation of ERH Temperature Monitoring Point (TMP)-K5 (incomplete)**

- K&S used their Diedrich 120 (D-120) truck-mounted drilling rig to continue advancing 4.25" inside diameter (ID) hollow-stem augers (HSAs) (which create a 7.88" diameter hole) with a wooden plug in the bit to 39 feet bgs, charging the HSAs with water between flight connections. The following are Photoionization Detector (PID) readings obtained from samples brought to the surface during drilling: 25' bgs – 1.3 ppm; 30' bgs – 145 ppm; 35' bgs – 348 ppm; 37' bgs – 308 ppm; and 39' bgs – 247 ppm.
- K&S personnel mixed 4.5 94-lb bags of Portland Type I cement in 25 gallons of water using a drill wisk, then lowered open-ended 1.75-inch diameter AWJ rods in the HSAs and tagged the wooden plug @ ~39 feet bgs. K&S charged the HSAs with water, used the rods to push the wooden plug out of the HSAs, then pulled out of the augers (POA) with the rods. K&S and TRS personnel lowered two 20-foot sections of 1.25" diameter copper pipe in the HSAs, soldering the coupler between the two sections then pumped this neat cement grout mixture down the HSAs and started POH with the HSAs.
- K&S personnel used the Moyno pump on the D-120 to mix two more batches (same volumes) of neat cement in two 55-gallon drums.
- K&S continued POH with HSAs while pouring more grout into HSAs (keeping the downhole HSAs full of grout until the last flight was POH). K&S mixed one more batch of neat cement (2 bags of Portland + 10 gal water) while POH with HSAs. A total of 15.5 94-lb bags of Type I Portland cement were mixed to bring grout to 4' bgs. The top of the copper pipe is 1.2' ags and will be cut off below grade once the cement grout has set. The bottom of the pipe is at 38.8' bgs.

### **Installation of ERH Multi-phase Extraction (MPE) electrode C2 (incomplete)**

- K&S used their D-120 truck-mounted drilling rig and a 8.25" ID HSA to core the asphalt at the revised location for MPE-C2. The location was moved 5' north of the original proposed location due to the presence of overhead cable TV wires directly over the

original proposed location. After the asphalt was cored, K&S advanced a pilot hole with a hand auger to 5' bgs to verify underground utility clearance. No utilities were encountered.

- K&S began advancing the lead 8.25" ID HSA with center plug on 3-inch AW rod, but after advancing only 3.5' bgs, resistance was encountered and the drill string (DS) was POH and the borehole explored further using a hand auger, posthole digger, probing rod and a shovel. Eventually, a 1.5" diameter steel pipe running east-west at the south edge of the borehole was exposed. It did not appear that the integrity of the pipe had been compromised.
- Carlos discussed the findings with Brad and it was decided that K&S would move to one of the other proposed MPE locations while Brad consulted with other TRS personnel to determine where the next revised location for MPE-C2 should be moved. The borehole was backfilled with the cuttings.

#### **Installation of ERH Multi-phase Extraction (MPE) electrode C3 (incomplete)**

- K&S used their D-120 truck-mounted drilling rig and a 8.25" ID HSA to core the asphalt. After the asphalt was cored, K&S (with assistance from TRS and CDM Smith personnel) advanced a pilot hole with a hand auger, posthole digger, probing rod and a shovel to 6.5' bgs to verify underground utility clearance. No utilities were encountered.
- K&S began advancing the lead 8.25" ID HSA with center plug on 3-inch AW rod, but after advancing to 5' bgs they SDFN and secured the drill rig and site for the night due to the late hour.

- Lithology & Photoionization Detector (PID) Readings:

<u>DEPTH</u> <u>(ft bgs)</u>	<u>PID</u> <u>(ppm)</u>	<u>LITHOLOGY</u>
0 - 0.4	Not Meas.	Asphalt
0.4 - 4.0	0.0	Limerock roadbase
4.0 - 5.0	0.0	Gravelly Silty SAND, med yel brn, f-c grn, sli clayey (lo plasticity), dry, no odor
5.0 - 6.5	0.0	Silty SAND, lt to med pinkish brn, f-m grn, sli clayey (low plasticity), dry, no odor

#### **Installation of 1" Tubing Connections to Entrainment and Vacuum Pipes @ 23 MPEs**

- TRS first drilled two, 1.5" holes in the sides of every grouted 10-inch MPE oversleeve. The location of the drilled holes corresponded to the two barbed fittings (i.e., one fitting for the MPE entrainment pipe and one for the MPE vacuum) to attach 1-inch thermally insulated, chemical-resistant tubing through the oversleeve.
- For these 23 electrode locations, TRS installed 4 foot long sections of thermally insulated, chemical-resistance tubing connected to the barbed fixtures on the entrainment and vacuum pipes affixed to the electrode well cap.
- This tubing was installed for all MPE wells in rows E, F, G, H, J, and K.

#### **Installation of Ball-Valves and 'T' connections to Entrainment and Vacuum Tubing @ 9 MPEs**

- Ball-valves were installed at the non-electrode end of the two, 1-inch chemically-resistant tubes affixed to the MPE well cap, and then joined together by a 'T' joint with CPVC piping for later connection to the main piping conveyance system.
- The wells with these CPVC tubing and valve system installed today were: MPE-H2, J-3, J-4, J-5, J-6, K-3, -K-4, -K-5, and -K-6.



**Additional Notes and Observations:**

- Brad spoke with the woman who lives across Marshall Street from the site regarding the need to trim the tree that extends over the roadway at some of the proposed “B” locations. Brad stated that the woman said it was fine for TRS to have the tree trimmed to whatever extent was necessary. Later, Brad stated that he had made arrangements for Wolf Brothers Tree Service to visit the site this afternoon at 3:00 to provide a bid and possibly perform the work. However, by the end of the day, they still had not shown up at the site.
- K&S Personnel were 2.5 hours late arriving at the site this morning reportedly due to vehicle troubles.
- TRS conducted a Health & Safety tailgate meeting in the morning with K&S and CDM Smith personnel
- The original proposed location for MPE-C2 was directly under an overhead cable TV line and too close to an existing overhead powerline, so it was decided to move the location for MPE-C2 approximately 5 feet due north of the original location.
- After hand-augering MPE-C2 to 5-feet bgs, Carlos Santana (K&S) continued to slowly drill out the hole using an 8.25-inch hollow-stem auger at a reduced drilling rate. At approximately 3.5 feet bgs, a black pipe was reportedly felt by K&S, and drilling immediately stopped. After additional hand excavation of the MPE-C2 location, the black, approximately 1.5-inch pipe was discovered in this location that appeared to run perpendicular to the road. This pipe was not marked by the previously completed utility locates, and appeared to be undamaged by our investigation.

**Verbal Communications between CDM Smith and TRS Regarding Concerns or Deficiencies:**

- CDM Smith and K&S personnel once again suggested to Brad that it might be more efficient for the remaining proposed locations where drilling is to be performed in Marshall Street to be cleared using air knifing as it is very time consuming to hand auger through 4+ feet of compacted limerock gravel that appears to be present under the asphalt. Brad stated that he had proposed this option to his superiors, but had yet to receive any guidance on the matter.

**Potential Work Tomorrow:**

- Tomorrow K&S will use the D-120 drill rig to complete drilling the borehole for and install MPE-C3 and hopefully at least one of the other appurtenances that remain to be installed in Marshall Street. The subsurface appurtenances that remain to be installed using the drill rig include 6 MPEs, 2 VPs, & 2 GWPs in Marshall Street and VP-L4 & GWP-L4 outside the bay door of the building onsite. TRS will continue to build surface completion assemblies for the MPEs and VPs.

# DAILY ACTIVITY REPORT

**Date:** 8/18/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** 72 degrees, sunny. Forecast is for temperature to go into the mid 80s.

**Report Author:** Kevin Saller (CDM Smith)

**Personnel/visitors onsite:**

**CDM Smith:** David Rojas, Kevin Saller

**TRS:** Brad Morris & Ted Hughley

**K&S Engineers, Inc. (K&S):** Carlos Santana & Jack Zilz

**Visitors:** Brian Conrath, IEPA

**Work Performed Today Onsite by TRS and Contractors for TRS:**

**Installation of ERH Multi-phase Extraction (MPE) electrode C3 (complete)**

- Previously, K&S used their D-120 truck-mounted drilling rig and an 8.25" ID HSA to core the asphalt. After the asphalt was cored, K&S (with assistance from TRS and CDM Smith personnel) advanced a pilot hole with a hand auger, posthole digger, probing rod and a shovel to 6.5' bgs to verify underground utility clearance. No utilities were encountered.
- K&S began advancing the lead 8.25" ID HSA with center plug on 3-inch AW rod. K&S, installed a wooden plug in the HSA flight bit, and drilled to 39.5 feet bgs. K&S charged the HSAs with water between flight connections after reaching 25' bgs to maintain hydrostatic pressure. The highest PID reading measured obtained from soil cuttings was 202 ppm from cuttings brought to the surface on the flights of the augers after spinning the augers for ~3 minutes after reaching a depth of 39.5' bgs.
- K&S lowered 4-inch diameter black iron Sch 40 pipe with capped bottom inside the HSAs. The bottom 21-foot long joint with vertical 40-slot was lowered into the HSAs first, then a 15.5-foot joint and a coupler on the bottom was connected to it prior to lower the pipe to the bottom of the boring. The top of slotted interval ~3.2 feet bgs. A temporary cap was placed on the top of the electrode during installation, but it will be replaced with the appropriate electrode cap with fittings once the entrainment pipe is installed. TRS applied conductive paste on the threads of pipe prior to making all of the connections except the temporary cap on top.
- Before beginning to pull out of the hole (POH) with the HSAs, K&S poured one 50-lb bag of steel shot and dropped the electrode pipe down from a height of 2 feet above ground surface to push out the wooden plug in the HSA bit. K&S continued POH with HSAs while pouring hydrated 3:1 graphite/steel shot mix into HSAs (keeping mix at least five feet inside HSAs until reaching the prescribed level of 23' bgs). Required 4 mixes to bring 3:1 graphite/iron shot to 22 feet bgs. K&S continued POH with HSAs while pouring #4 silica/bluestone sand into HSAs (keeping sand at least 5 feet inside HSAs until POH

w/HsAs. Required 31, 50-lb bags of sand to bring it to 0.5 foot bgs. The top of the electrode sites at approximately 3.5 ft bgs.

- A drip tube (a 5-foot long ½" diameter copper pipe with a stainless steel screen clamped onto the bottom of it) was placed within the annular sand in the lead HSA just before it was POH so as the HSA was POH the drip tube settled in the borehole adjacent to the black iron electrode. The drip tube was subsequently adjusted so that the top of the drip tube ended up ~3.0' below ground surface.

- Lithology & Photoionization Detector (PID) Readings:

DEPTH (ft bgs)	PID (ppm)	LITHOLOGY
0 - 0.4	Not Meas.	Asphalt
0.4 - 4.0	0.0	Limerock roadbase
4.0 - 5.0	0.0	Gravelly Silty SAND, med yel brn, f-c grn, sli clayey (lo plasticity), dry, no odor
5.0 - 6.5	0.0	Silty SAND, lt to med pinkish brn, f-m grn, sli clayey (low plasticity), dry, no odor
6.5 - 7.5	0.0	Silty SAND, med yellow brown, fine grained, some fine to Gravel, dry, no odor
7.5-24.0	0.4-0.0	SAND, light yellow brown, fine grained, moderately silty, dry, no odor, becoming less silty with depth
24 - 32	0.3-0.6	SAND, few medium grained, coarsening with depth, light to medium greyish brown, fine grained, dry becoming slightly moist to wet with depth to 30 ft bgs, no odor
32 - 34	8.7-47.8	SAND, light tomed grayish brown, fine to medium grain, slightly moderate odor, wet
34 - 37	70.9	SAND, medium brownish gray, fine to medium green with trace to few coarse grain, moderate odor, more dark minerals than above soils
37 - 40	198-202	SAND, A.A, except stained, few to some coarse grained, strong odor, PID reading from bottom of HAS at 38 ppm

#### **Installation of ERH Multi-phase Extraction (MPE) electrode C4 (complete)**

- K&S used their D-120 truck-mounted drilling rig and an 8.25" ID HSA to core the asphalt. After the asphalt was cored, K&S (with assistance from TRS and CDM Smith personnel) advanced a pilot hole with a hand auger, posthole digger, probing rod and a shovel to 6.5' bgs to verify underground utility clearance. No utilities were encountered. However, at 4.5' bgs, a 2" thick Styrofoam pad was discovered with gravel above and below. After a phone call to Brett Baker at Bodine, he was able to confirm that this Styrofoam was placed to insulate installed water lines running between extraction wells installed approximately 3' east of the location for MPE-C4.
- K&S began advancing the lead 8.25" ID HSA with center plug on 3-inch AW rod. K&S, installed a wooden plug in the HSA flight bit, and drilled to 39.5 feet bgs. K&S charged the HSAs with water between flight connections after reaching 25' bgs to maintain hydrostatic pressure. The highest PID reading measured obtained from soil cuttings was 0.4 ppm from cuttings brought to the surface on the flights of the augers after spinning the augers for ~3 minutes after reaching a depth of 39.5' bgs.
- K&S lowered 4-inch diameter black iron Sch 40 pipe with capped bottom inside the HSAs. The bottom 21-foot long joint with vertical 40-slot was lowered into the HSAs first, then a 15.5-foot joint and a coupler on the bottom was connected to it prior to lower the pipe to the bottom of the boring. The top of slotted interval ~3.2 feet bgs. A



temporary cap was placed on the top of the electrode during installation, but it will be replaced with the appropriate electrode cap with fittings once the entrainment pipe is installed. TRS applied conductive paste on the threads of pipe prior to making all of the connections except the temporary cap on top. The top of the electrode sites at approximately 3.5 ft bgs.

- Before beginning to POH with the HSAs, K&S poured one 50-lb bag of steel shot and dropped the electrode pipe down from a height of 2 feet above ground surface to push out the wooden plug in the HSA bit. K&S continued POH with HSAs while pouring hydrated 3:1 graphite/steel shot mix into HSAs (keeping mix at least five feet inside HSAs until reaching the prescribed level of 23' bgs). Required 4 mixes to bring 3:1 graphite/iron shot to 22 feet bgs. K&S continued POH with HSAs while pouring #4 silica/bluestone sand into HSAs (keeping sand at least 5 feet inside HSAs until POH w/HSAs. Required 30, 50-lb bags of sand to bring it to 0.5 foot bgs.
- A drip tube (a 5-foot long ½" diameter copper pipe with a stainless steel screen clamped onto the bottom of it) was placed within the annular sand in the lead HSA just before it was POH so as the HSA was POH the drip tube settled in the borehole adjacent to the black iron electrode. The drip tube was subsequently adjusted so that the top of the drip tube ended up ~3.0' below ground surface.
- Lithology & Photoionization Detector (PID) Readings:

<u>DEPTH</u> <u>(ft bgs)</u>	<u>PID</u> <u>(ppm)</u>	<u>LITHOLOGY</u>
0 - 0.4	Not Meas.	Asphalt
0.4 - 3.5	0.0	Limerock roadbase
3.5 - 4.0	0.0	SAND, Brownish gray, silty sand, fine to medium, dry, no odor
4.0 - 4.5	0.0	GRAVEL, grayish brown, some sand, used as fill
4.5 - 4.7	Not Meas.	~2" thick Styrofoam used as insulation for nearby water pipes
4.7 - 5.0	0.0	Gravely silty SAND, grayish brown
5.0 - 8.0	0.1-0.3	Silty SAND, light brown and gray, fine to medium, no odor
8 - 25	0.2-0.4	SAND, light brown, fine, some silt, no odor, dry
25 - 35	0.1-0.4	SAND, mostly fine to medium, some coarse, brown, wet, gets coarser with depth
35 - 40	0.1-0.3	SAND, brown, medium to coarse, wet, no odor, some gravel, more black minerals than above

#### **Installation of Ball-Valves and 'T' connections to Entrainment and Vacuum Tubing @ 14 MPEs**

- Ball-valves were installed at the non-electrode end of the two, 1-inch chemically-resistant tubes affixed to the MPE well cap, and then joined together by a 'T' joint with CPVC piping for later connection to the main piping conveyance system.
- The wells with these CPVC tubing and valve system installed today were: MPE-G-3, -G-4, -G-5, -F-3, -F-4, -F-5, -E-3, -E-4, -E-5, -L-4, -L-5, -L-6, -M-5, -M-6.
- A correction on the previous days report: All of MPE row H was completed, as well as MPE G-2, for these valve system installations.

#### **Additional Notes and Observations:**

- TRS contracted Wolf Brothers Tree Service to visit the site early in the day to perform tree trimming activities for clearing the space for the MPE 'B' row. They were onsite for approximately 1 hour.
- TRS conducted a Health & Safety tailgate meeting in the morning with K&S and CDM Smith personnel. Discussed new ways to hand-auger points, and to mitigate the heat

stresses during the day. The use of a vacuum was implemented to help remove soils while hang-augering, which was a moderate success.

**Verbal Communications between CDM Smith and TRS Regarding Concerns or Deficiencies:**

- None today.

**Potential Work Tomorrow:**

- Tomorrow K&S will use the D-120 drill rig to complete drilling the borehole for and install MPE-C4 and hopefully at least one of the other appurtenances that remain to be installed in Marshall Street. The subsurface appurtenances that remain to be installed using the drill rig include 4 MPEs, 2 VPs, & 2 GWPs in Marshall Street and VP-L4 & GWP-L4 outside the bay door of the building onsite.

# DAILY ACTIVITY REPORT

**Date:** 8/19/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** 70 degrees, cloudy. Forecast: temperature in the 80s with high chance of rain.

**Report Author:** Kevin Saller (CDM Smith)

**Personnel/visitors onsite:**

**CDM Smith:** Kevin Saller

**TRS:** Brad Morris & Ted Hughley

**K&S Engineers, Inc. (K&S):** Carlos Santana & Jack Zilz

**Visitors:** None

**Work Performed Today Onsite by TRS and Contractors for TRS:**

**Installation of ERH Vapor Piezometer (VP)-B4 (complete)**

- K&S used their D-120 truck-mounted drilling rig to advance a pilot hole with 4.25" ID HSAs (which create a 7.88" diameter hole) with center plug on 1.75-inch AWJ rods to 5' bgs. K&S pulled out of the hole (POH) with the HSA and center drill, installed a wooden plug in the lead HSA, then drilled to 15 feet bgs.
- The HAS was then POH, leaving the hole open to 15' bgs.
- TRS personnel lowered the pre-assembled 14.04-foot long VP in the open hole which consisted of 2.5' of 1.5" diameter stainless-steel (SS) wire-wrapped screen, 5.75' of 1.5" diameter SS riser, and 5.75' of 1.5" diameter CPVC pipe. The additional 0.04' of length of the VP is due to the coupling between the SS riser and the CPVC pipe.
- K&S began dumping #4 silica/bluestone sand in the annulus while holding the VP so the bottom would be approximately 13 foot bgs. After dumping 3.5, 50-lb bags of #4 sand into the annulus, the top of the sandpack was at 8' bgs.
- K&S poured neat cement into the annulus, filling the remainder of the annulus to the surface. This neat cement was mixed with 3, 94-lb bags of Type I Portland cement w/15 gallons of water. The top of the CPVC pipe was cut off at the road surface.

**Additional Notes and Observations:**

- After clouding up early in the morning, rain began to fall at approximately 0900, followed by a few nearby lightning strikes. The drill rig was shut down at this point, and cleanup and storage at the site was done.
- Since the modified location (due to the power lines) for MPE-C2 had an unmarked metal pipe at approximately 4.5' bgs, a new location still needs to be found for drilling to be able to finish.

**Verbal Communications between CDM Smith and TRS Regarding Concerns or Deficiencies:**



- None today.

**Potential Work Next Week:**

- Next week, K&S will use the D-120 drill rig to complete drilling the remaining Marshall Street MPE and groundwater piezometer wells. The subsurface appurtenances that remain to be installed using the drill rig include 4 MPEs, 1 VP, & 2 GWPs in Marshall Street and VP-L4 & GWP-L4 outside the bay door of the building onsite.

# DAILY ACTIVITY REPORT

**Date:** 8/22/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** 70 degrees, sunny. Forecast: temperature in the 80s and sunny.

**Report Author:** Kevin Saller (CDM Smith)

**Personnel/visitors onsite:**

**CDM Smith:** Kevin Saller

**TRS:** Tim Black & Jeff Riffe

**K&S Engineers, Inc. (K&S):** Carlos Santana & Jack Zilz

**Visitors:** Brian Conrath

**Work Performed Today Onsite by TRS and Contractors for TRS:**

**Installation of ERH Groundwater Piezometer (GWP)-B4 (complete)**

- K&S used their Diedrich-120 (D-120) truck-mounted drilling rig to advance a pilot hole with 4.25" inside diameter (ID) hollow stem augers (HSAs) (which create a 7.88" diameter hole) with center plug on 1.75-inch AWJ rod to 1' below ground surface (bgs). The hole was then hand-augered to 6.5' bgs to check for utility lines and none were found. K&S installed a wooden plug in the bit, and drilled to 47 feet bgs. K&S charged the HSAs with water between flight connections.
- PID was used on soils from HAS cuttings at depths throughout the drilling. All soil PID readings were found below 0.3 ppm. The soil profile was identical to nearby MPE wells and consisted of fine to medium sands to 47' bgs.
- After advancing the HSAs to 47' bgs, K&S lowered 1.75" diameter AWJ rods inside the HSAs and flushed the HSAs [no water or sand was brought to the surface during flushing] to remove the wooden plug, POH rods, poured 0.5 bag of #4 silica/bluestone down the HSA, and lowered the stainless-steel (SS) pipe for the GWP in the HSAs. The bottom of the SS pipe was finished at 46' bgs. From bottom to top, these 2" diameter materials include a SS cap, 5' long SS riser (sump), SS coupler, 10' long SS V-wrapped 20-slot well screen, SS coupler, 10' long SS V-wrapped 20-slot well screen, SS coupler, 10' long SS riser, SS coupler, and 17'1" of SS risers to 4 ft bgs to TOC. TRS personnel applied Teflon tape to the threads at each connection.
- Once K&S completed lowering the SS materials for the GWP in the HSAs, they began slowly pouring #4 silica/bluestone sand into HSAs to set a sandpack in the annulus while picking up (PU) and POH w/HSAs (keeping sand at least one foot inside HSAs).
- The following are some construction details for GWP-B4:
  - o Top of SS materials = 4' bgs
  - o Bottom of SS materials = 46' bgs
  - o Screened Interval = 21' bgs to 41' bgs
  - o Top of Sandpack = 18' bgs
- Required 17, 50-lb bags of #4 silica/bluestone sand to bring it to 18 feet bgs in the

annulus.

- K&S poured grout into the HSAs while finishing POH, filling the remainder of the annulus up to approximately 5' bgs. 4.5 bags of 94-lb bags of Type I Portland cement were used with 25 gallons of water.

**Additional Notes and Observations:**

- An onsite meeting was conducted at 1100 with representatives of CDM Smith, Bodine, TRS, and IEPA to discuss tie-in of the new system to the existing groundwater extraction system, and additional concerns at the site.

**Verbal Communications between CDM Smith and TRS Regarding Concerns or Deficiencies:**

- None today.

**Potential Work Tomorrow:**

- On Tuesday 8/23, K&S will use the D-120 drill rig to complete drilling the remaining Marshall Street groundwater piezometer well GWP-C3, and possibly move on to electrode point MPE-C2.



# DAILY ACTIVITY REPORT

**Date:** 8/23/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** 70 degrees, sunny. Forecast: temperature in the 70's and sunny.

**Report Author:** Kevin Saller (CDM Smith)

**Personnel/visitors onsite:**

**CDM Smith:** Kevin Saller

**TRS:** Tim Black, Brad Morris, Ted Hughley, & Jeff Riffe

**K&S Engineers, Inc. (K&S):** Carlos Santana & Jack Zilz

**Visitors:** None

**Work Performed Today Onsite by TRS and Contractors for TRS:**

**Installation of ERH Multi-phase Extraction (MPE) electrode B4 (new location, complete)**

- Previously, K&S used their D-120 truck-mounted drilling rig and an 8.25" ID HSA to core the asphalt. After the asphalt was cored, K&S (with assistance from TRS and CDM Smith personnel) advanced a pilot hole with a hand auger, posthole digger, probing rod and a shovel to 8.0' bgs to verify underground utility clearance. No utilities were encountered in the second location for MPE-B4 which is 4' east of the original point. An iron pipe was discovered in the first marked location for MPE-B4 during hand-augering.
- K&S began advancing the lead 8.25" ID HSA with center plug on 3-inch AW rod. K&S, installed a wooden plug in the HSA flight bit, and drilled to 39.5 feet bgs. K&S charged the HSAs with water between flight connections after reaching 25' bgs to maintain hydrostatic pressure. The highest PID reading measured obtained from soil cuttings was 0.3 ppm from cuttings brought to the surface on the flights of the augers after spinning the augers for ~3 minutes after reaching a depth of 39.5' bgs.
- K&S lowered 4-inch diameter black iron Sch 40 pipe with capped bottom inside the HSAs. The bottom 21-foot long joint with vertical 40-slot was lowered into the HSAs first, then a 15.5-foot joint and a coupler on the bottom was connected to it prior to lower the pipe to the bottom of the boring. A temporary cap was placed on the top of the electrode during installation, but it will be replaced with the appropriate electrode cap with fittings once the entrainment pipe is installed. TRS applied conductive paste on the threads of pipe prior to making all of the connections except the temporary cap on top.
- Before beginning to pull out of the hole (POH) with the HSAs, K&S poured one 50-lb bag of steel shot and dropped the electrode pipe down from a height of 2 feet above ground surface to push out the wooden plug in the HSA bit. K&S continued POH with HSAs while pouring hydrated 3:1 graphite/steel shot mix into HSAs (keeping mix at least five feet inside HSAs until reaching 22' bgs). Required 4 mixes to bring 3:1 graphite/iron shot to 22 feet bgs. K&S continued POH with HSAs while pouring #4 silica/bluestone sand into HSAs (keeping sand at least 5 feet inside HSAs until POH w/HSAs. Required 34, 50-

lb bags of sand to bring it to 0.5 foot bgs. The top of the electrode sits at approximately 2.5 ft bgs.

- A drip tube (a 5-foot long ½" diameter copper pipe with a stainless steel screen clamped onto the bottom of it) was placed within the annular sand before the HSA was POH so as the HSA was POH the drip tube settled in the borehole adjacent to the black iron electrode. The drip tube was subsequently adjusted so that the top of the drip tube ended up ~3.0' below ground surface.

- Lithology & Photoionization Detector (PID) Readings:

DEPTH (ft bgs)	PID (ppm)	LITHOLOGY
0 - 0.4	Not Meas.	Asphalt
0.4 - 1.25	0.0	Limerock roadbase, light brown, dry
1.25 - 2.5	0.0	Gravelly sand, dark brown, moist, find to coarse
2.5 - 13	0.0	Silty SAND, light brown, fine, no odor, dry
13 - 18	0.1-0.3	SAND, light yellow brown, fine grained, moderately silty, dry, no odor, becoming less silty with depth, some dark minerals
18 - 26	0.1-0.3	Silty SAND, light brown, medium, moist, no odor
26 - 40	0.1-0.3	SAND, medium brownish gray, trace to few coarse grain, no odor, more dark minerals than above soils, becomes more coarse with depth.

#### **Installation of ERH Groundwater Piezometer (GWP)-C3 (complete)**

- K&S used their Diedrich-120 (D-120) truck-mounted drilling rig to advance a pilot hole with 4.25" inside diameter (ID) hollow stem augers (HSAs) (which create a 7.88" diameter hole) with center plug on 1.75-inch AWJ rod to 1' below ground surface (bgs). The hole was then hand-augered to 6' bgs to check for utility lines and none were found. K&S installed a wooden plug in the bit, and drilled to 47 feet bgs. K&S charged the HSAs with water between flight connections.
- PID was used on soils from HSA cuttings at depths throughout the drilling. All soil PID readings were found below 0.3 ppm. The soil profile was identical to nearby MPE wells and consisted of fine to medium sands to 47' bgs.
- After advancing the HSAs to 47' bgs, K&S lowered 1.75" diameter AWJ rods inside the HSAs and flushed the HSAs [no water or sand was brought to the surface during flushing] to remove the wooden plug, POH rods, poured 0.5 bags of #4 silica/bluestone down the HSA, and lowered the stainless-steel (SS) pipe for the GWP in the HSAs. The bottom of the SS pipe was finished at 46' bgs. From bottom to top, these 2" diameter materials include a SS cap, 5' long SS riser (sump), SS coupler, 10' long SS V-wrapped 20-slot well screen, SS coupler, 10' long SS V-wrapped 20-slot well screen, SS coupler, 20' long SS riser to 1.5 ft bgs to TOC. TRS personnel applied Teflon tape to the threads at each connection.
- Once K&S completed lowering the SS materials for the GWP in the HSAs, they began slowly pouring #4 silica/bluestone sand into HSAs to set a sandpack in the annulus while picking up (PU) and POH w/HSAs (keeping sand at least one foot inside HSAs).
- The following are some construction details for GWP-B4:
  - o Top of SS materials = 1.5' bgs
  - o Bottom of SS materials = 46.5' bgs
  - o Screened Interval = 21.5' bgs to 41.5' bgs
  - o Top of Sandpack = 17.5' bgs
- Required 17, 50-lb bags of #4 silica/bluestone sand to bring it to 17.5 feet bgs in the annulus.

- K&S poured grout into the HSAs while finishing POH, filling the remainder of the annulus up to approximately 3' bgs. 5 bags of 94-lb bags of Type I Portland cement were used with 30 gallons of water.

**Additional Notes and Observations:**

- An iron ~4" pipe was found during daylighting in the location of MPE-B4 at 5.5' bgs, which was not on any drawings or marked by the utility findings. The location of MPE-B4 was moved 4' east of the original location.

**Verbal Communications between CDM Smith and TRS Regarding Concerns or Deficiencies:**

- None today.

**Potential Work Tomorrow:**

- On 8/24, K&S will use the D-120 drill rig to complete drilling the remaining Marshall Street electrodes MPE-B3 and -B2.



# DAILY ACTIVITY REPORT

**Date:** 8/24/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** 65 degrees, rainy. Forecast: temperature in the 70's and sunny.

**Report Author:** Kevin Saller (CDM Smith)

**Personnel/visitors onsite:**

**CDM Smith:** Kevin Saller and Andrew Schamber

**TRS:** Tim Black, Brad Morris, Ted Hughley, & Jeff Riffe

**K&S Engineers, Inc. (K&S):** Carlos Santana & Jack Zilz

**Visitors:** None

**Work Performed Today Onsite by TRS and Contractors for TRS:**

**Installation of ERH Multi-phase Extraction (MPE) electrode B3 (new location, complete)**

- K&S used their D-120 truck-mounted drilling rig and an 8.25" ID HSA to core the asphalt. After the asphalt was cored, K&S (with assistance from TRS and CDM Smith personnel) advanced a pilot hole with a hand auger, posthole digger, probing rod, vacuum, and a shovel to 8.0' bgs to verify underground utility clearance. No utilities were encountered in the second location for MPE-B3 which is 4' directly east of the original point.
- K&S began advancing the lead 8.25" ID HSA with center plug on 3-inch AW rod. K&S, installed a wooden plug in the HSA flight bit, and drilled to 39.5 feet bgs. K&S charged the HSAs with water between flight connections after reaching 25' bgs to maintain hydrostatic pressure. The highest PID reading measured obtained from soil cuttings was 0.3 ppm from cuttings brought to the surface on the flights of the augers after spinning the augers for ~3 minutes after reaching a depth of 39.5' bgs.
- K&S lowered 4-inch diameter black iron Sch 40 pipe with capped bottom inside the HSAs. The pipe consisted of 3, 10.5' sections and 1, 5' section. The 10' sections were lowered into the HSAs first with couplers joining them, then the 5' joint was connected at the top prior to dropping the pipe to the bottom of the HSA. A temporary cap was placed on the top of the electrode during installation, but it will be replaced with the appropriate electrode cap with fittings once the entrainment pipe is installed. TRS applied conductive paste on the threads of pipe prior to making all of the connections except the temporary cap on top.
- Before beginning to pull out of the hole (POH) with the HSAs, K&S poured one 50-lb bag of steel shot and dropped the electrode pipe down from a height of 3 feet above ground surface to push out the wooden plug in the HSA bit. K&S continued POH with HSAs while pouring hydrated 3:1 graphite/steel shot mix into HSAs (keeping mix at least five feet inside HSAs until reaching 21' bgs). Required 4 mixes to bring 3:1 graphite/iron shot to 21 feet bgs. K&S continued POH with HSAs while pouring #4 silica/bluestone sand

into HSAs (keeping sand at least 5 feet inside HSAs until POH w/HSAs. Required 32, 50-lb bags of #4 sand to bring it to 0.5 foot bgs. The top of the electrode sits at approximately 2.5 ft bgs.

- A drip tube (a 5-foot long ½" diameter copper pipe with a stainless steel screen clamped onto the bottom of it) was placed within the annular sand before the HSA was POH so as the HSA was POH the drip tube settled in the borehole adjacent to the black iron electrode. The drip tube was subsequently adjusted so that the top of the drip tube ended up ~8.0' below ground surface.

- Lithology & Photoionization Detector (PID) Readings (MPE-B3):

DEPTH (ft bgs)	PID (ppm)	LITHOLOGY
0 - 0.4	Not Meas.	Asphalt
0.4 - 1.25	0.0	Limerock roadbase, light brown, dry
1.25 - 2.5	0.0	Gravelly sand, dark brown, moist, find to coarse
2.5 - 13	0.0	Silty SAND, light brown, fine, no odor, dry
13 - 18	0.1-0.3	SAND, light yellow brown, fine grained, moderately silty, dry, no odor, becoming less silty with depth, some dark minerals
18 - 26	0.1-0.3	Silty SAND, light brown, medium, moist, no odor
26 - 40	0.1-0.3	SAND, medium brownish gray, trace to few coarse grain, no odor, more dark minerals than above soils, becomes more coarse with depth.

#### **Installation of ERH MPE electrode B2 (new location, complete)**

- K&S used their D-120 truck-mounted drilling rig and an 8.25" ID HSA to core the asphalt. After the asphalt was cored, K&S (with assistance from TRS and CDM Smith personnel) advanced a pilot hole with a hand auger, posthole digger, probing rod, vacuum, and a shovel to 8.0' bgs to verify underground utility clearance. No utilities were encountered in the second location for MPE-B2 which is 4' directly east of the original point.
- K&S began advancing the lead 8.25" ID HSA with center plug on 3-inch AW rod. K&S, installed a wooden plug in the HSA flight bit, and drilled to 39.5 feet bgs. K&S charged the HSAs with water between flight connections after reaching 25' bgs to maintain hydrostatic pressure. The highest PID reading measured obtained from soil cuttings was 7.8 ppm from cuttings brought to the surface on the flights of the augers in soils located in the vadose zone, but soils located beneath the water table had minimal PID results.
- K&S lowered 4-inch diameter black iron Sch 40 pipe with capped bottom inside the HSAs. The pipe consisted of 3, 10.5' sections and 1, 5' section. The 10' sections were lowered into the HSAs first with couplers joining them, then the 5' joint was connected at the top prior to dropping the pipe to the bottom of the HSA. A temporary cap was placed on the top of the electrode during installation, but it will be replaced with the appropriate electrode cap with fittings once the entrainment pipe is installed. TRS applied conductive paste on the threads of pipe prior to making all of the connections except the temporary cap on top.
- Before beginning to pull out of the hole (POH) with the HSAs, K&S poured one 50-lb bag of steel shot and dropped the electrode pipe down from a height of 3 feet above ground surface to push out the wooden plug in the HSA bit. K&S continued POH with HSAs while pouring hydrated 3:1 graphite/steel shot mix into HSAs (keeping mix at least five feet inside HSAs until reaching 22' bgs). Required 4 mixes to bring 3:1 graphite/iron shot to 22 feet bgs. K&S continued POH with HSAs while pouring #4 silica/bluestone sand into HSAs (keeping sand at least 5 feet inside HSAs until POH w/HSAs. Required 34, 50-

lb bags of #4 sand to bring it to 0.5 foot bgs. The top of the electrode sits at approximately 2.5 ft bgs.

- A drip tube (a 5-foot long ½" diameter copper pipe with a stainless steel screen clamped onto the bottom of it) was placed within the annular sand before the HSA was POH so as the HSA was POH the drip tube settled in the borehole adjacent to the black iron electrode. The drip tube was subsequently adjusted so that the top of the drip tube ended up ~8.0' below ground surface.

- Lithology & Photoionization Detector (PID) Readings (MPE-B2):

DEPTH (ft bgs)	PID (ppm)	LITHOLOGY
0-4"	--	Asphalt
4"-16"	0.0	Limerock roadbase, light brown, dry, no odor
16"-30"	0.0	Gravely sand, dark brown, moist, fine to coarse, moist
30"-25'	2.0-7.8	Silty SAND, light brown, medium, moist, no odor
25'-40'	0.1-0.3	SAND, medium, brown, trace to few coarse grain, no odor, becomes more coarse with depth.

#### **Installation of ERH MPE Valve Assembly Connections**

- TRS personnel installed 1", 2", and 4" CPVC connections to the previously installed MPE wellhead valve assemblies for connection to the main 6" CPVC conveyance line to the blower (not yet installed) at 19 MPE locations. These connections were done by using a combination of CPVC Tee's and reducers, were laid down directly on the ground for all conveyance, and follow the piping plan set forth in the workplan.

#### **Additional Notes and Observations:**

- None today.

#### **Verbal Communications between CDM Smith and TRS Regarding Concerns or Deficiencies:**

- None today.

#### **Potential Work Tomorrow:**

- On 8/25, K&S will use the D-120 drill rig to complete drilling the remaining Marshall Street electrode MPE-B2 move across the site to GWP-L4.



# DAILY ACTIVITY REPORT

**Date:** 8/25/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** 68 degrees F, cloudy. Forecast: temperature in the low 80's and cloudy.

**Report Author:** Kevin Saller (CDM Smith)

**Personnel/visitors onsite:**

**CDM Smith:** Kevin Saller and Andrew Schamber

**TRS:** Brad Morris, Ted Hughley, & Jeff Riffe

**K&S Engineers, Inc. (K&S):** Carlos Santana & Jack Zilz

**Visitors:** None

**Work Performed Today Onsite by TRS and Contractors for TRS:**

**Installation of ERH Multi-phase Extraction (MPE) electrode C2 (new location, complete)**

- K&S used their D-120 truck-mounted drilling rig and an 8.25" ID HSA to core the asphalt. After the asphalt was cored, K&S (with assistance from TRS and CDM Smith personnel) advanced a pilot hole with a hand auger, posthole digger, probing rod, vacuum, and a shovel to 8.0' bgs to verify underground utility clearance. No utilities were encountered in the second location for MPE-C2 which is approximately 4' east-southeast of the original point.
- K&S began advancing the lead 8.25" ID HSA with center plug on 3-inch AW rod. K&S, installed a wooden plug in the HSA flight bit, and drilled to 39.5 feet bgs. K&S charged the HSAs with water between flight connections after reaching 25' bgs to maintain hydrostatic pressure. The highest PID reading measured obtained from soil cuttings was 248 ppm from cuttings brought to the surface on the flights of the augers from approximately 39.5' bgs.
- K&S lowered 4-inch diameter black iron Sch 40 pipe with capped bottom inside the HSAs. The pipe consisted of 3, 10.5' sections and 1, 5' section. The 10' sections were lowered into the HSAs first with couplers joining them, then the 5' joint was connected at the top prior to dropping the pipe to the bottom of the HSA. A temporary cap was placed on the top of the electrode during installation, but it will be replaced with the appropriate electrode cap with fittings once the entrainment pipe is installed. TRS applied conductive paste on the threads of pipe prior to making all of the connections except the temporary cap on top.
- Before beginning to pull out of the hole (POH) with the HSAs, K&S poured one 50-lb bag of steel shot and dropped the electrode pipe down from a height of 3 feet above ground surface to push out the wooden plug in the HSA bit. K&S continued POH with HSAs while pouring hydrated 3:1 graphite/steel shot mix into HSAs (keeping mix at least five feet inside HSAs until reaching 22' bgs). Required 4 mixes to bring 3:1 graphite/iron shot to 22 feet bgs. K&S continued POH with HSAs while pouring #4 silica/bluestone sand

into HSAs (keeping sand at least 5 feet inside HSAs until POH w/HSAs. Required 33, 50-lb bags of #4 sand to bring it to 0.5 foot bgs. The top of the electrode sits at approximately 2.5 ft bgs.

- A drip tube (a 5-foot long ½" diameter copper pipe with a stainless steel screen clamped onto the bottom of it) was placed within the annular sand before the HSA was POH so as the HSA was POH the drip tube settled in the borehole adjacent to the black iron electrode. The drip tube was subsequently adjusted so that the top of the drip tube ended up ~8.0' below ground surface.

- Lithology & Photoionization Detector (PID) Readings (MPE-C2):

DEPTH (ft bgs)	PID (ppm)	LITHOLOGY
0 - 4"	--	Asphalt
4" - 16"	0.0	Limerock roadbase, light brown, dry
16 - 30"	0.0	Gravelly sand, dark brown, moist, find to coarse, no odor
30" - 25'	0.0-7.0	Silty SAND, light brown, fine, no odor, moist
25' - 30'	2.0-7.0	Silty SAND, brown, fine to medium, moderately silty, moist, some odor, becoming less silty with depth
30' - 40'	110-248	SAND, medium, brownish gray (stained), few coarse grain, strong odor, becomes more coarse with depth.

#### **Installation of ERH Groundwater Piezometer (GWP)-L4 (complete)**

- K&S used their Diedrich-120 (D-120) truck-mounted drilling rig to advance a pilot hole with 4.25" inside diameter (ID) hollow stem augers (HSAs) (which create a 7.88" diameter hole) with center plug on 1.75-inch AWJ rod to 5' below ground surface (bgs). K&S installed a wooden plug in the bit, and drilled to 47 feet bgs. K&S charged the HSAs with water between flight connections. This GWP was moved approximately 1.5 feet to the southeast to avoid obstacles near the original point.
- The soil profile was identical to nearby MPE wells and consisted of fine to medium sands to 47' bgs.
- After advancing the HSAs to 47' bgs, K&S lowered 1.75" diameter AWJ rods inside the HSAs and flushed the HSAs [no water or sand was brought to the surface during flushing] to remove the wooden plug, POH rods, poured 0.5 bags of #4 silica/bluestone down the HSA, and lowered the stainless-steel (SS) pipe for the GWP in the HSAs. The bottom of the SS pipe was finished at 46' bgs. From bottom to top, these 2" diameter materials include a SS cap, 5' long SS riser (sump), SS coupler, 10' long SS V-wrapped 20-slot well screen, SS coupler, 10' long SS V-wrapped 20-slot well screen, SS coupler, 22.16' long SS riser to 1.5 ft ags to TOC. TRS personnel applied Teflon tape to the threads at each connection.
- Once K&S completed lowering the SS materials for the GWP in the HSAs, they began slowly pouring #4 silica/bluestone sand into HSAs to set a sandpack in the annulus while picking up (PU) and POH w/HSAs (keeping sand at least one foot inside HSAs).
- The following are some construction details for GWP-L4:
  - o Top of SS materials = 1.5' ags
  - o Bottom of SS materials = 46.5' bgs
  - o Screened Interval = 21.5' bgs to 41.5' bgs
  - o Top of Sandpack = 17' bgs
- K&S poured grout into the HSAs while finishing POH, filling the remainder of the annulus up to approximately 0.5' bgs. 5.5 bags of 94-lb bags of Type I Portland cement were used with 30 gallons of water.

**Installation of ERH MPE Valve Assembly Connections**

- TRS personnel installed 1", 2", and 4" CPVC connections to the previously installed MPE wellhead valve assemblies for connection to the main 6" CPVC conveyance line to the blower (not yet installed) at 7 MPE locations within the interior of the building. These connections were done by using a combination of CPVC Tee's and reducers, were laid down directly on the ground for all conveyance, and follow the piping plan set forth in the workplan.

**Additional Notes and Observations:**

- None today.

**Verbal Communications between CDM Smith and TRS Regarding Concerns or Deficiencies:**

- None today.

**Potential Work Tomorrow:**

- On 8/26, K&S will use the D-120 drill rig to complete drilling the remaining two vapor sampling points VP-L4 and VP-C2.



# DAILY ACTIVITY REPORT

**Date:** 8/26/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** 72 degrees F, sunny. Forecast: temperature in the low 80's and sunny.

**Report Author:** Kevin Saller (CDM Smith)

## **Personnel/visitors onsite:**

**CDM Smith:** Kevin Saller and Andrew Schamber

**TRS:** Brad Morris, Ted Hughley, & Jeff Riffe

**K&S Engineers, Inc. (K&S):** Carlos Santana & Jack Zilz

**Visitors:** Mike Jackson (**Jackson Welding**)

## **Work Performed Today Onsite by TRS and Contractors for TRS:**

### **Installation of ERH Vapor Piezometer (VP)-L4 (complete)**

- K&S used their D-120 truck-mounted drilling rig to advance a pilot hole with 4.25" ID HSAs (which create a 7.88" diameter hole) with center plug on 1.75-inch AWJ rods to 5' bgs. K&S pulled out of the hole (POH) with the HSA and center drill, installed a wooden plug in the lead HSA, then drilled to 15 feet bgs.
- The HSA was then POH, leaving the hole open to 15' bgs.
- TRS personnel lowered the pre-assembled 13.5-foot long VP in the open hole which consisted of 2.5' of 1.5" diameter stainless-steel (SS) wire-wrapped screen, 5.25' of 1.5" diameter SS riser, and 5.75' of 1.5" diameter CPVC pipe.
- K&S began dumping #4 silica/bluestone sand in the annulus while holding the VP so the bottom would be approximately 13.5 foot bgs. After dumping bags of #4 sand into the annulus, the top of the sandpack was at 8' bgs.
- K&S poured neat cement into the annulus, filling the remainder of the annulus to the surface. The top of the CPVC pipe was approximately 2" ags.

### **Installation of ERH Vapor Piezometer (VP)-C2 (complete)**

- K&S and TRS first used a hand-auger to check for utilities in the new location of VP-C2 to 7' bgs. The new location is approximately 4' due south of the existing monitoring well location on the property due west of the site. The existing monitoring well is located 9'9" due west of the new point for MPE-B4.
- K&S used their D-120 truck-mounted drilling rig to advance 4.25" ID HSAs (which create a 7.88" diameter hole) with center plug on 1.75-inch AWJ rods in 2' sections, while using the 2' long split-spoon tool and hammer to sample the soils to 32' bgs using the PID. K&S pulled out of the hole (POH) with the HSA and center drill.
- TRS personnel lowered the pre-assembled 14.2-foot long VP in the open hole which consisted of 3' of 1.5" diameter stainless-steel (SS) wire-wrapped screen, 5.25' of 1.5" diameter SS riser, and 5.75' of 1.5" diameter CPVC pipe.

- K&S began dumping #4 silica/bluestone sand in the annulus while holding the VP so the bottom would be approximately 14 foot bgs. After dumping 11 bags of #4 sand into the annulus, the top of the sandpack was at 8' bgs.
- K&S poured neat cement into the annulus, filling the remainder of the annulus to 0.5' bgs. The top of the CPVC pipe was approximately 2" ags.

**Additional Notes and Observations:**

- None today.

**Verbal Communications between CDM Smith and TRS Regarding Concerns or Deficiencies:**

- None today.

**Potential Work Next Week:**

- The week of August 28<sup>th</sup> will see the abandonment of the onsite multilevel monitoring well (approximately 75' deep), and the construction of the trenches on Marshall Street for the MPE conveyance lines to the main system.

# DAILY CONSTRUCTION REPORT

**Date:** 08/29/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site  
Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** Sunny/Partly Cloudy, 75 degrees Fahrenheit

**Report Author:** Andrew Schamber (CDM Smith)

**Other personnel/visitors onsite:** Brad Morris (TRS), Jeff Riffe (TRS), Carlos Santana (K&S), Jack Zilz (K&S), Neal (Keldorn Trucking), Mike Pinn (Diamond Sawcut), John Grabs (CDM Smith)

## Work Performed Today by Contractor:

### K&S Engineers

- K&S abandoned the existing multilevel monitoring well (approximately 75' bgs). They grouted the well using a drum and automatic mixer up to the top of casing which was approximately 2 feet below ground surface. After letting the grout settle they topped it off to bring the grout back up to top of casing.
- After grouting the well they over drilled the well with an 8" HSA to 10 feet below ground surface and placed 4 bags of bentonite chips down the well and hydrated the chips.

### TRS and Subcontractors

- Keldorn Trucking hauled off 7 rolloff dumpsters of soil to the landfill. After hauling the soil to the landfill, they removed 3 rolloffs from the site leaving 4 onsite for storage of soil that will be generated during trenching activities that are scheduled to occur this week.
- Diamond Sawcut sawcut all of the trenches in Marshall St.
- TRS performed general site cleaning which consisted of trimming down overgrown shrubs and weeds with a weed wacker.
- TRS completed the electrode construction of K-5 which included placing a copper pipe down into the water table and screwing on the electrode head.

## Additional Notes and Observations:

- None.

## Specific Inspections Performed and Results of these Inspections:

- No inspections were performed today.

## Type and Location of Tests Performed and Results of these Tests:

- No tests were performed today.



**Verbal Instructions Provided to the Contractor (s) on Construction Deficiencies or Retesting Required:**

- No instructions were provided today.

**Delivery of Equipment and Materials:**

- UPS made a delivery for TRS which contained electrical cable and pipe fittings.

**Potential Work Tomorrow:**

- Trenching in Marshall St shall start on Tuesday August 29, 2016.



Photographic Log			Project: IEPA Rockford Area 4	Project Number: 80527
Photo No. 1	Date: 08/29/2016	Time: 1054		
Direction:  Southeast				
Description:  Diamond Sawcut sawcutting trenches in Marshall St.				

Photo No. <b>2</b>	Date: 08/29/2016	Time: 1055	
Direction:  North			
Description:  Excavator TRS mobilized on site to assist in trenching and general small excavating			

Photo No. <b>3</b>	Date: 08/29/2016	Time: 1112	
Direction:			
Description:  K&S over-drilling groundwater monitoring well located on site. Well was grouted from bottom to top of casing then over-drilled to 10 feet below ground surface. Concrete was then poured into well vault and settled to 2.5 feet below ground surface.			

# DAILY CONSTRUCTION REPORT

**Date:** 08/30/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** Cloudy 74 degrees Fahrenheit, forecast calls for 50 percent chance of rain throughout day

**Report Author:** Andrew Schamber (CDM Smith)

**Other personnel/visitors onsite:** Brad Morris (TRS), Jeff Riffe (TRS), Steve Agostire (TRS), Tim Black (TRS), Brett Baker (Bodine), Troy (Bodine), Chris Thomas (TRS)

## Work Performed Today by Contractor:

### TRS and Subcontractors

- TRS trenched north to south along western side of Marshall St between the "B" row of electrodes and "C" row of electrodes. Trenching depths ranged from 25.5" bgs to 29" bgs.
- Andrew Schamber spoke with Troy (Bodine), Brett Baker (Bodine), and Chris Thomas (TRS) about connecting into the existing groundwater extraction system vault. We came to a conclusion that the electrical cable that was to be run into the vault needed to be ran in a conduit or sleeve to prevent water from entering the vault as well as having a quick grip adaptor placed on the cable as it enters the vault.
- Electrodes C-4 (depth to water 23.3' bgs), B-4 (depth to water 23.1' bgs), B-3 (depth to water 23.4' bgs), B-2 (depth to water 23.4' bgs), and C-2 (depth to water 23.6' bgs) were completed by placing a copper pipe (stinger) down the well to 6" below the groundwater surface and an electrode cap on the well.
- A new copper drip tube was placed in C-2.

### Additional Notes and Observations:

- None.

### Specific Inspections Performed and Results of these Inspections:

- No inspections were performed today.

### Type and Location of Tests Performed and Results of these Tests:

- No tests were performed today.

### Verbal Instructions Provided to the Contractor (s) on Construction Deficiencies or Retesting Required:

- No instructions were provided today.



**Delivery of Equipment and Materials:**

- No deliveries were made

**Potential Work Tomorrow:**

- Continued trenching in Marshall St shall be conducted and the remaining electrodes that are underground shall be completed with a stinger and electrode cap on Wednesday August 30, 2016.




Photographic Log			Project: IEPA Rockford Area 4	Project Number: 80527
Photo No. <b>1</b>	Date: 08/30/2016	Time: 0805		
Direction:				
East				
Description:				
TRS began trenching in Marshall St. starting on the Southeast corner and working their way to the North.				

Photo No. <b>2</b>	Date: 08/30/2016	Time: 1109
Direction:  South		
Description:  TRS excavated down to between 25" and 30" below ground surface for cpvc pipe that connected to below ground surface electrodes, temperature monitoring points, and groundwater monitoring points.		



<b>Photo No.</b> <b>3</b>	<b>Date:</b> 08/30/2016	<b>Time:</b> 1650	
<b>Direction:</b> South			
<b>Description:</b>  TRS stockpiled asphalt from the stop of the trenches on the southwest corner of the property. All of the asphalt will be recycled at the end of trenching activities.			

# DAILY CONSTRUCTION REPORT

**Date:** 08/31/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** Sunny 70 degrees Fahrenheit, forecast calls for sunny and 78 degrees Fahrenheit

**Report Author:** Andrew Schamber (CDM Smith)

**Other personnel/visitors onsite:** Amy Wagner (TRS), Jeff Riffe (TRS), Steve Agostire (TRS), Tim Black (TRS), Chris Thomas (TRS)

## Work Performed Today by Contractor:

### TRS and Subcontractors

- Trenching activities continued throughout the day. A stormwater pipe was encountered while trenching along the east side of the row of "D" electrodes. A new trenching schematic was discussed between Jeff Riffe, Chris Thomas and Andrew Schamber. A new trench was started that runs parallel to the existing trench but shifted 4 feet to the East. The exit point for all of the pipe and cable was shifted to exit to the east of electrode D-3.
- Electrodes C-3, D-5, D-4, and D-3 were completed with electrode caps and copper stingers.
- Electrode cable was ran to B-4, B-3, B-2, C-4, C-3, C-2, D-3, D-4, and D-5. Electrode cable was cut to desired length and then lugged at the end. The wire was stripped using a wire stripper then lugged with a long barrel lug then crimped. Silicone tape was then applied over the connection between lug and wire sleeve. Electrical tape was then applied over the silicone tape. No heat shrink was used.

### Additional Notes and Observations:

- None.

### Specific Inspections Performed and Results of these Inspections:

- No inspections were performed today.

### Type and Location of Tests Performed and Results of these Tests:

- No tests were performed today.

### Verbal Instructions Provided to the Contractor (s) on Construction Deficiencies or Retesting Required:

- No instructions were provided today.



**Delivery of Equipment and Materials:**

- No deliveries were made

**Potential Work Tomorrow:**

- Continued work in Marshall St including placing cpvc pipe and connecting the rest of the electrodes will begin at 0700 on September 1, 2016.


Photographic Log			Project: IEPA Rockford Area 4	Project Number: 80527
Photo No. 1	Date: 08/31/2016	Time: 00857		
Direction:  East				
Description:  A stormwater pipe was encountered while digging a north-south trench between the C and D row of electrodes. After discussions, a new trench was sawcut 4 feet to the east of planned trench.				




Photo No. <b>2</b>	Date: 08/31/2016	Time: 1109	
Direction:  South			
Description:  Example of typical below ground electrode construction. Electrode cables were cut to desired length and then lugged at the end. The wire was stripped using a wire stripper then lugged with a long barrel lug. Luges were crimped at the end using a large wire crimper. Silicone tape and electrical tape was then applied over connection between lug and rubber sleeve.			

Photo No. <b>3</b>	Date: 08/31/2016	Time: 1612	
Direction: South			
Description:  New north-south trench located 4 feet to the east of proposed trench. New trench was 26" wide and excavated to a depth of 25" to 30"			

<b>Photo No.</b> <b>4</b>	<b>Date:</b> 08/31/2016	<b>Time:</b> 1533
<b>Direction:</b> East		
<b>Description:</b>  Electrode cable was ran at the bottom of the trench and exited at the southeast corner.		





# DAILY CONSTRUCTION REPORT

**Date:** 09/01/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site  
Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** Cloudy 63 degrees Fahrenheit, forecast calls for partly sunny and 73 degrees Fahrenheit

**Report Author:** Andrew Schamber (CDM Smith)

**Other personnel/visitors onsite:** Jeff Riffe (TRS), Chris Thomas (TRS), Amy Wagner (TRS), Steve Agostire (TRS), Mike Jackson (Jackson Welding), Randy Lingle (Midwest Mechanical)

## Work Performed Today by Contractor:

### TRS and Subcontractors

- Randy Lingle (Midwest Mechanical) cored a 4" hole in the side of the groundwater extraction vault under the supervision of Brett Baker (Bodine). Concrete was roughly 6" thick.
- Keldorn Trucking was on site to start hauling off roll offs that were full of soil. 3 roll offs were hauled off site.
- TRS hand cleared to approximately 4' over the line marked for the natural gas line. No pipe was encountered so it was safe to continue to excavate trench that connects to the extraction vault and runs along the west side of Marshall St.
- Once all of the cpvc pipe was connected for the blowdown pipe, TRS pressure tested the line to make sure that there were no leaks. They used the hose that was on site and filled the line with water with an internal pressure of 40 to 70 psi. The test was concluded after the water was held in the pipe for several minutes and the line was walked by TRS personnel.
- Mike Jackson (Jackson Welding) was on site to fix an electrode cap that had broken the previous week.
- Electrodes B-4, B-3, B-2 and C-4 were all completed with cpvc pipe, electrode cable and drip tubes
- VP-B4, GWP-B4, GWP-C3 were completed as well.
- Drip tube construction consisted of copper drip tube, hex adapter, white plastic tube, and a copper 90 degree angle with the solenoid valve being added later.
- Flowable backfill was brought on site by Ozinga followed by a truck with concrete, also brought on to site by Ozinga. TRS backfilled the trench from the existing extraction vault all the way to electrode C-4. Concrete was placed on top which was roughly 4" thick.
- A cooling line was ran north to south between "B" and "C" electrode rows then runs east-west along south side of trenches.
- RTD's (temperature probes) were placed in east-west trench along south border of trench lines. These are used to record the temperature of the various trenches.

## Additional Notes and Observations:

- None.

**Specific Inspections Performed and Results of these Inspections:**

- No inspections were performed today.

**Type and Location of Tests Performed and Results of these Tests:**

- No tests were performed today.

**Verbal Instructions Provided to the Contractor (s) on Construction Deficiencies or Retesting Required:**


- No instructions were provided today.


**Delivery of Equipment and Materials:**

- None.

**Potential Work Tomorrow:**

- Finish connecting all below ground monitoring points and general site cleaning will begin at 0700 on September 3, 2016.

Photographic Log			Project: IEPA Rockford Area 4	Project Number: 80527
Photo No. 1	Date: 09/1/2016	Time: 0816		
Direction:  North				
Description:  TRS excavated near Bodine's groundwater extraction vault so that a holes could be drilled into the side.				

<b>Photo No.</b> <b>2</b>	<b>Date:</b> 09/1/2016	<b>Time:</b> 1125	
<b>Direction:</b>  North			
<b>Description:</b>  2 holes were cored into the side of the vault. One cpvc pipe was placed for a blowdown pipe and another cpvc pipe was used for a communication cable. Both pipes were sealed into place using concrete.			




<b>Photo No.</b> <b>3</b>	<b>Date:</b> 09/1/2016	<b>Time:</b> 1156	
<b>Direction:</b> South			
<b>Description:</b>  Blowdown pipe was pressure tested by placed vlaves on each side and filling the pipe with water. Internal pressure was between 40 and 70 psi.			



Photo No. 4	Date: 09/1/2016	Time: 1356	
Direction:			
Description:  Typical electrode construction including drip tube.			

<b>Photo No.</b> <b>5</b>	<b>Date:</b> 09/1/2016	<b>Time:</b> 1423	
<b>Direction:</b> North			
<b>Description:</b>  Flowable backfill (Illinois DOT specified) was placed in trench by Ozinga.			

# DAILY CONSTRUCTION REPORT

**Date:** 09/02/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site  
Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** Clear 68 degrees Fahrenheit, forecast calls for partly sunny and 75 degrees Fahrenheit

**Report Author:** Andrew Schamber (CDM Smith)

**Other personnel/visitors onsite:** Jeff Riffe (TRS), Chris Thomas (TRS),

## **Work Performed Today by Contractor:**

### **TRS and Subcontractors**

- Drip tubes were completed on remaining electrodes.
- CpvC piping was completed to all below ground monitoring points and was also organized at the exit trench so that everything was well organized.
- Site was cleared and cleaned of soil and asphalt. Marshall Street will be opened as soon as all of the trenches are backfilled and topped with concrete. Street will hopefully be open sometime next week.
- Chris Thomas (TRS) was able to connect all of the cameras on site and code them so that they are all on the same network.

## **Additional Notes and Observations:**

- None.

## **Specific Inspections Performed and Results of these Inspections:**

- No inspections were performed today.

## **Type and Location of Tests Performed and Results of these Tests:**

- No tests were performed today.

## **Verbal Instructions Provided to the Contractor (s) on Construction Deficiencies or Retesting Required:**

- No instructions were provided today.

## **Delivery of Equipment and Materials:**

- None.

**Potential Work Next Week:**

- Backfill and concrete the remaining open trenches and continue to connection all of the above ground electrodes will begin at 0900 on September 6, 2016.



# DAILY CONSTRUCTION REPORT

**Date:** 09/06/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site  
Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** Clear 82 degrees Fahrenheit, forecast calls for sunny and 90 degrees Fahrenheit

**Report Author:** Andrew Schamber (CDM Smith)

**Other personnel/visitors onsite:** Jeff Riffe (TRS), Amy Wagner (TRS), Tim Black (TRS), Brad Morris (TRS), Ted Hughley (TRS), John Grabs (CDM Smith)

## Work Performed Today by Contractor:

### TRS and Subcontractors

- TRS performed a SERT test on the electrodes which passed voltage through the electrodes in order to see how much current can be passed through the entire network of electrodes.
- TRS sawcut and extended trench from electrode C-3 to EW-3. Asphalt was removed and placed on the asphalt pile located near the soil rolloff dumpster. Soil was removed to a depth of approximately 2.5 feet below ground surface and placed in soil rolloff dumpster.
- After soil was removed 3 1.25" diameter holes were drilled into the southwestern side of EW-3 well vault with a concrete hammer drill. Conduit was placed into holes. Conduit was for the cooling loop that will be placed in the extraction well as well as for the temperature probe that will be placed in the well.
- After conduit was placed, hydraulic cement was used to make a watertight seal around the conduit.
- PVC cover was placed and cemented around electrode K-5

## Additional Notes and Observations:

- None.

## Specific Inspections Performed and Results of these Inspections:

- No inspections were performed today.

## Type and Location of Tests Performed and Results of these Tests:

- No tests were performed today.

## Verbal Instructions Provided to the Contractor (s) on Construction Deficiencies or Retesting Required:

- No instructions were provided today.

**Delivery of Equipment and Materials:**

- None.

**Potential Work for September 7, 2016:**

- TRS plans to have flowable backfill and concrete delivered onsite so that Marshall St. can be opened up at the end of the week. Work will begin at 0700 on September 7, 2016.


Photographic Log			Project: IEPA Rockford Area 4	Project Number: 80527
Photo No. 1	Date: 09/6/2016	Time: 1334		
Direction:  West				
Description:  Exit point of underground piping.				

Photo No. <b>2</b>	Date: 09/6/2016	Time: 1335
Direction:  East		
Description:  East-west trench with all of the underground piping.		





Photo No. <b>3</b>	Date: 09/6/2016	Time: 1433	
Direction: North			
Description:  TRS extended trench to the North of electrode C-3 to connect with EW-3.			



<b>Photo No.</b> 4	<b>Date:</b> 09/6/2016	<b>Time:</b> 1554
<b>Direction:</b> East		
<b>Description:</b>  3 1.25" holes were drilled into side of EW-3 vault. 2 holes for the cooling loop that will be placed in EW-3 and 1 hole for a temperature probe. Holes were sealed with hydraulic cement.		



# DAILY CONSTRUCTION REPORT

**Date:** 09/07/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** Cloudy 79 degrees Fahrenheit, forecast calls for rain and 87 degrees Fahrenheit

**Report Author:** Andrew Schamber (CDM Smith)

**Other personnel/visitors onsite:** Jeff Riffe (TRS), Ted Hughley (TRS), Tim Black (TRS), Brad Morris (TRS), ComED Electric Co., Ozinga (Backfill and Concrete Co.)

## Work Performed Today by Contractor:

### TRS and Subcontractors

- Disturbed area by Bodine's groundwater extraction system was raked of any large stones, seeded, and mulch matted to prevent any soil erosion from area into Marshall St.
- Remaining open trenches were filled with Illinois DOT spec flowable backfill (Number 2364) up to 6" below ground surface by Ozinga. A total of 25 cubic yards of backfill was delivered to the site.
- ComED (Electric Company) was on site to see if electric poles had been set and meter was connected. ComED was supposed to be on site September 6, 2016 to set pole but never came on site. Brad Morris (TRS) spoke with ComED to see when they would be on site to set pole but nothing was conclusive.
- Well vault was placed over VP-C2. Vault will be concreted in at a later date.
- RTD's (temperature monitoring probe) were placed in TMP wells. RTD's were placed starting at 3 feet below ground surface every 5 feet down to 37' below ground surface in TMP-M5, TMP-K7, TMP-K5, and TMP-K4. RTD's were placed starting at 22' below ground surface every 5' down to 37' below ground surface in TMP-H3 and TMP-F4.
- Over-sleeves were placed on all TMP wells to protect wells and to keep rain from getting into wells.

### Additional Notes and Observations:

- None.

### Specific Inspections Performed and Results of these Inspections:

- No inspections were performed today.

### Type and Location of Tests Performed and Results of these Tests:

- No tests were performed today.

### Verbal Instructions Provided to the Contractor (s) on Construction Deficiencies or

**Retesting Required:**

- No instructions were provided today.


**Delivery of Equipment and Materials:**

- None.


**Potential Work for September 8, 2016:**

- Concrete will be placed on remaining trenches in Marshall St. Work will begin at 0700 on September 7, 2016.



<b>Photographic Log</b>			Project: <b>IEPA Rockford Area 4</b>	Project Number: <b>80527</b>
<b>Photo No.</b> <b>1</b>	<b>Date:</b> 09/7/2016	<b>Time:</b> 1244		
<b>Direction:</b> West				
<b>Description:</b>  Excavation near groundwater extraction system vault was raked, seeded, and mulch mat was placed.				

<b>Photo No.</b> <b>2</b>	<b>Date:</b> 09/7/2016	<b>Time:</b> 1431	
<b>Direction:</b> North			
<b>Description:</b>  All trenches were filled with flowable backfill by Ozinga.			

<b>Photo No.</b> <b>3</b>	<b>Date:</b> 09/7/2016	<b>Time:</b> 1605	
<b>Direction:</b> East			
<b>Description:</b>  Over-sleeves were placed over temperature monitoring points (TMP). Temperature probes (RTD's) were placed down TMP's. First RTD was either placed at 3' below ground surface or 22' below ground surface and each subsequent RTD was 5' below with the last one at 37' below ground surface. Over-sleeves were placed to protect RTD's and keep water from getting into wells.			

<b>Photo No.</b> <b>4</b>	<b>Date:</b> 09/6/2016	<b>Time:</b> 1554	
<b>Direction:</b> East			
<b>Description:</b>  3 1.25" holes were drilled into side of EW-3 vault. 2 holes for the cooling loop that will be placed in EW-3 and 1 hole for a temperature probe. Holes were sealed with hydraulic cement.			

# DAILY CONSTRUCTION REPORT

**Date:** 09/08/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** Cloudy 73 degrees Fahrenheit, forecast calls for 83 degrees Fahrenheit and partly cloudy

**Report Author:** Andrew Schamber (CDM Smith)

**Other personnel/visitors onsite:** Jeff Riffe (TRS), Ted Hughley (TRS), Brad Morris (TRS), Julie (CDM Smith), Ozinga (Backfill and Concrete Co.), Dach Fencing (Fence Co.)

## Work Performed Today by Contractor:

### TRS and Subcontractors

- Dach Fencing installed permanent fencing along Marshall Street. Fencing connected to existing fence and ran to the north on the east side of Marshall St. which then connected to the building. Fence was standard chain-link fence with poles spaced 10 feet apart and barbed wire on top.
- Ozinga brought 4,000 psi concrete on site to place in trenches in Marshall St. TRS used concrete floats to smooth and spread concrete to match existing grade. A total of 16 cubic yards of concrete was placed on site.

## Additional Notes and Observations:

- None.

## Specific Inspections Performed and Results of these Inspections:

- No inspections were performed today.

## Type and Location of Tests Performed and Results of these Tests:

- No tests were performed today.

## Verbal Instructions Provided to the Contractor (s) on Construction Deficiencies or Retesting Required:

- No instructions were provided today.


## Delivery of Equipment and Materials:


- None.




**Potential Work for September 9, 2016:**

- Barricades and temporary fencing will be mobilized off site and Marshall Street will be opened to the general public. Work will begin at 0700 on September 9, 2016.

<b>Photographic Log</b>			Project: <b>IEPA Rockford Area 4</b>	Project Number: <b>80527</b>
<b>Photo No.</b> <b>1</b>	<b>Date:</b> 09/8/2016	<b>Time:</b> 1356		
<b>Direction:</b> South				
<b>Description:</b>  Concrete was brought onto the site and poured by Ozinga. TRS used concrete floats to smooth the concrete out by hand.				

<b>Photo No.</b> <b>2</b>	<b>Date:</b> 09/8/2016	<b>Time:</b> 1409		
<b>Direction:</b> North				
<b>Description:</b>  Concrete was poured up to the exit point of all of the pipes and cables coming from the trench. It was poured and the fence set approximately 3 feet away so someone couldn't reach in and grab anything on site.				

<b>Photo No.</b> <b>3</b>	<b>Date:</b> 09/8/2016	<b>Time:</b> 1629		
<b>Direction:</b> N/A				
<b>Description:</b>  TRS shoveled concrete around the vault set over VP-C2.				

<b>Photo No.</b> <b>4</b>	<b>Date:</b> 09/6/2016	<b>Time:</b> 1554	
<b>Direction:</b> East			
<b>Description:</b>  3 1.25" holes were drilled into side of EW-3 vault. 2 holes for the cooling loop that will be placed in EW-3 and 1 hole for a temperature probe. Holes were sealed with hydraulic cement.			



# DAILY CONSTRUCTION REPORT

**Date:** 09/12/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** Sunny 66 degrees Fahrenheit, forecast calls for 79 degrees Fahrenheit and sunny

**Report Author:** Andrew Schamber (CDM Smith)

**Other personnel/visitors onsite:** Jeff Riffe (TRS), Ted Hughley (TRS), Brad Morris (TRS), Dach Fencing (Fence Co.), ComED (Electric Company), Garvish Damania (CDM Smith), Keldorn Trucking

## Work Performed Today by Contractor:

### TRS and Subcontractors

- Dach Fencing installed privacy netting on new permanent fencing that was installed last week.
- ComED was on site in the morning setting 2 electrical poles. One pole was located on the southwestern side of the property roughly 25 feet to the south of permanent fence with the second pole being set approximately 30 feet to the north of the first pole.
- Keldorn trucking was on site hauling off the 2 remaining roll off dumpsters that were on site. One dumpster had soil in it from trenching activities and the other was empty. The roll off with soil was taken to the landfill and both were hauled off site by Keldorn Trucking.
- TRS started pulling Type W cable for electrodes. Cable was on large wooden spools. Cable was pulled off spool and placed on the ground, once the cable was laid out on the pavement each individual cable was coiled and placed next to an electrode. 24 electrodes had cable coiled next to them at the end of the day.

## Additional Notes and Observations:

- None.

## Specific Inspections Performed and Results of these Inspections:

- No inspections were performed today.

## Type and Location of Tests Performed and Results of these Tests:

- No tests were performed today.

## Verbal Instructions Provided to the Contractor (s) on Construction Deficiencies or Retesting Required:

- No instructions were provided today.

**Delivery of Equipment and Materials:**

- UPS delivered one box for TRS.

**Potential Work for September 13, 2016:**

- TRS plans to pull the rest of the electrode cable and place next to remaining electrodes as well as start connecting drip tubes. Work will begin at 0700 on September 13, 2016.




Photographic Log			Project: IEPA Rockford Area 4	Project Number: 80527
Photo No. 1	Date: 09/12/2016	Time: 1039		
Direction:  East				
Description:  Type W 350 cable was delivered on spools. TRS unspooled the cable to disconnect the various lengths of cable.				

Photo No. 2	Date: 09/12/2016	Time: 1357	
Direction:  Northwest			
Description:  Cable was drug to the appropriate electrode and coiled next to it until it was time to land the cable on the electrode and on the PCU.			

<b>Photo No.</b> <b>3</b>	<b>Date:</b> 09/12/2016	<b>Time:</b> 1401	
<b>Direction:</b> Northwest			
<b>Description:</b>  TRS shoveled concrete around the vault set over VP-C2.			





# DAILY CONSTRUCTION REPORT

**Date:** 09/13/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** Partly Cloudy and 66 degrees Fahrenheit, forecast calls for 78 degrees Fahrenheit and Partly Cloudy

**Report Author:** Andrew Schamber (CDM Smith)

**Other personnel/visitors onsite:** Jeff Riffe (TRS), Ted Hughley (TRS), Brad Morris (TRS), ComED (Electric Company), Dave Miller (TRS)

## Work Performed Today by Contractor:

### TRS and Subcontractors

- TRS finished pulling Type W cable for electrodes with remaining cable that was on site. More cable is needed than what was delivered to the site, so they plan on bringing remaining cable from Des Plaines next week (week of 9/19).
- ComED came back on site to run wire from existing power pole located on the western side of the property to the 2 new power poles that they set yesterday, 9/12.
- TRS plans to have their electrician on site tomorrow, 9/14, to install meter and run wire from power pole through conduit below ground in preparation for delivery of PCU next week, week of 9/19.
- TRS trenched out a 2' wide by 15' long by 3' deep next to northern most power pole and laid 4" conduit in preparation for next week.
- Dave Miller (TRS) on site today to take a look at electrical components.
- TRS finished connecting all below ground electrodes with cpvc pipe.
- TRS began labeling and drilling holes in electrode outer sleeves. Labels included electrode name as well as which phase each electrode was to be connected to. The hole in the outer sleeve is for the electrode cable to be connected to the electrode head.

### Additional Notes and Observations:

- None.

### Specific Inspections Performed and Results of these Inspections:

- No inspections were performed today.

### Type and Location of Tests Performed and Results of these Tests:

- No tests were performed today.

### Verbal Instructions Provided to the Contractor (s) on Construction Deficiencies or Retesting Required:

- No instructions were provided today.

**Delivery of Equipment and Materials:**

- No deliveries were made today.

**Potential Work for September 14, 2016:**

- TRS plans to start connecting drip tubes together and installing solenoid valves and various other tasks to get ready for the next week. Work will begin at 0700 on September 14, 2016.




Photographic Log			Project: IEPA Rockford Area 4	Project Number: 80527
Photo No. 1	Date: 09/13/2016	Time: 1114		
Direction:  Southwest				
Description:  TRS used a mini excavator to dig trench for conduit that will run from ComED's power pole, underground, and up into the site inside of the fence.				

Photo No. <b>2</b>	Date: 09/13/2016	Time: 1117
Direction:  West		
Description:  TRS trenched to a depth of 3' below ground surface with a length of 10' and a width of 2'		





Photo No. <b>3</b>	Date: 09/13/2016	Time: 1413	
Direction: West			
Description:  TRS completed the recovery piping for the underground electrodes in Marshall St.			

<b>Photo No.</b> <b>4</b>	<b>Date:</b> 09/13/2016	<b>Time:</b> 1618
<b>Direction:</b>  N/A		
<b>Description:</b>  4" CPVC was used as conduit for cable running from power pole to PCU. The pipe was laid on the bottom of the trench (approximately 3' below ground surface).		



<b>Photo No.</b> <b>5</b>	<b>Date:</b> 09/13/2016	<b>Time:</b> 1643
<b>Direction:</b> Southwest		
<b>Description:</b>  The trench was backfilled with native soil.		



# DAILY CONSTRUCTION REPORT

**Date:** 09/14/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** Partly Cloudy and 62 degrees Fahrenheit, forecast calls for 75 degrees Fahrenheit and Partly Cloudy

**Report Author:** Andrew Schamber (CDM Smith)

**Other personnel/visitors onsite:** Jeff Riffe (TRS), Ted Hughley (TRS), Brad Morris (TRS), ComED (Electric Company), MKD Electric

## Work Performed Today by Contractor:

### TRS and Subcontractors

- TRS finished connecting all of the electrode cables to the above ground electrode heads. Cables were slid through a hole that was drilled into the outer protective sleeve. Some cables required new lugs to be set either because the old lugs were in bad shape or were not present. Lugs were placed on the cable by stripping off rubber protective sleeve then crimped into place with a long barrel lugger. No heat shrink was placed on connection between rubber sleeve and lug because the connection is made inside of the outer protective sleeve which has a black protective cover attached.
- MKD Electric was on site to install a meter and run wire through the below ground conduit. They will be back, tentatively, on Monday 9/19 to finish up.
- ComED was back on site today working on the new power poles and running wire and placing a cluster of transformers on power pole.
- TRS finished placing ball valves and 90 degree heads on drip tubes on following above ground electrodes: G2, G3, G4, G-5, F3, F4, F5, E3, E4, E5, H3, H4, H5, H6, and J6. A hole was drilled into the side of the outer protective sleeve and PEX tubing placed through the hole and connected to the 90 degree head on the drip tube.
- TRS placed ball valves on the following below ground electrode tubes coming out of trench: B2, B3, B4, B5, C2, C3, C4, D3, D4, and D5.

### Additional Notes and Observations:

- None.

### Specific Inspections Performed and Results of these Inspections:

- No inspections were performed today.

### Type and Location of Tests Performed and Results of these Tests:

- No tests were performed today.



**Verbal Instructions Provided to the Contractor (s) on Construction Deficiencies or Retesting Required:**


- No instructions were provided today.


**Delivery of Equipment and Materials:**

- No deliveries were made today.

**Potential Work for next week:**

- TRS will be back on site Tuesday 9/20 to gather materials for cooling loop that is to be installed in EW-3 on Wednesday 9/22. The PCU is now planned to be on site Thursday 9/22. Work will begin at 0900 on September 21, 2016.

<b>Photographic Log</b>			Project: <b>IEPA Rockford Area 4</b>	Project Number: <b>80527</b>
<b>Photo No.</b> <b>1</b>	<b>Date:</b> 09/14/2016	<b>Time:</b> 1110		
<b>Direction:</b>  N/A				
<b>Description:</b>  TRS drilled holes into the side of the electrode over sleeve so that the electrode cable could be connected to the electrode head.				

Photographic Log			Project: IEPA Rockford Area 4	Project Number: 80527
Photo No. 1	Date: 09/19/2016	Time: 0954		
Direction:  N/A				
Description:  MKD Electric installed an electrical meter on ComED's power pole.				



# DAILY CONSTRUCTION REPORT

**Date:** 09/21/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site  
Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** Cloudy, rainy and 67 degrees Fahrenheit, forecast calls for mid 80s with rain and Cloudy skies

**Report Author:** Andrew Schamber (CDM Smith)

**Other personnel/visitors onsite:** Jeff Riffe (TRS), Ted Hughley (TRS), Kevin Riffe (TRS)

## Work Performed Today by Contractor:

### TRS and Subcontractors

- TRS unloaded solenoid valves and cables as well as lumber that will be used for bracing of the underneath of the equipment.
- PCU, cooling tower, blower, and various other pieces of equipment will be delivered to the site at various times tomorrow with the PCU arriving first thing in the morning. TRS will have a crane mobilized on site to help in the placement of the equipment.
- TRS worked on fixing the electrode head on M6. The bolt that the electrode cable sheared off so they will have to bring a welder back on site in order to weld a new bolt onto the electrode head.
- TRS painted out and talked about placement of equipment on the site.
- TRS will install their cooling loop in EX-003 on Tuesday 9/27/2016 when Bodine plans to reinstall the pump back into the well.

### Additional Notes and Observations:

- None.

### Specific Inspections Performed and Results of these Inspections:

- No inspections were performed today.

### Type and Location of Tests Performed and Results of these Tests:

- No tests were performed today.

### Verbal Instructions Provided to the Contractor (s) on Construction Deficiencies or Retesting Required:


- No instructions were provided today.

### Delivery of Equipment and Materials:

- No deliveries were made today.

**Potential Work for next week:**

- TRS plans to have all of their equipment delivered to the site and they plan on starting to get connections in place between the various pieces of equipment. Work will begin at 0700 on September 22, 2016.

Photographic Log			Project: IEPA Rockford Area 4	Project Number: 80527
Photo No. 1	Date: 09/21/2016	Time: 0928		
Direction:				
West				
Description:				
Bodine pulled the pump and shroud out of Extraction Well 3 to be cleaned. TRS plans to install their cooling loop while the pump is out of the well.				



# DAILY CONSTRUCTION REPORT

**Date:** 09/22/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site  
Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** Cloudy 65 degrees Fahrenheit, forecast calls for mid 80s with Cloudy skies

**Report Author:** Andrew Schamber (CDM Smith)

**Other personnel/visitors onsite:** Jeff Riffe (TRS), Ted Hughley (TRS), Kevin Riffe (TRS), Alex Joss (CDM Smith), John Grabs (CDM Smith), MKD Electric, Creative Crane and Rigging

## Work Performed Today by Contractor:

### TRS and Subcontractors

- Large equipment was delivered to the site today. Equipment was delivered on 3 separate semi-truck loads. The following equipment was delivered to the site and placed by Creative Crane and Rigging via a GMK-5240 crane:
  - PCU
    - Model Number: PCU 2000-5
    - Supply Voltage: 12,470/13,200/13,800V
    - Frequency: 60 Hz
  - 2 Auto Transformers – Dry Transformers
    - ATX-1 Dry Type transformer Class AA
    - ATX-3 Dry Type Transformer
  - Blower
    - Blower ID: B10-40-6
    - 480 Volts
  - Condenser
  - 2 cooling towers
    - Delta Cooling Towers, INC
    - Blower motor attached to each cooling tower
- MKD Electric was also onsite today to run cable from power pole down through conduit and up through the bottom of the PCU. 3 cables were ran from power pole.
- A spool of Type W 350 electrode cable was also delivered to the site (approximately 1,200 feet)

### Additional Notes and Observations:

- None.

### Specific Inspections Performed and Results of these Inspections:

- No inspections were performed today.

### Type and Location of Tests Performed and Results of these Tests:

- No tests were performed today.

**Verbal Instructions Provided to the Contractor (s) on Construction Deficiencies or Retesting Required:**

- No instructions were provided today.

**Delivery of Equipment and Materials:**

- See description of daily work in previous section for deliveries that were made today.

**Potential Work for next week:**

- TRS plans to start connecting equipment together and placing the rest of the electrode cable near remaining electrodes that need cable. Work will begin at 0700 on September 23, 2016.


Photographic Log			Project: IEPA Rockford Area 4	Project Number: 80527
Photo No. 1	Date: 09/22/2016	Time: 0915		
Direction:  Southeast				
Description:  Creative Crane and Rigging setting up the crane before the equipment arrives on site.				

Photo No. <b>2</b>	Date: 09/22/2016	Time: 1027
Direction:  East		
Description:  PCU arrives to the site via semi-truck. Creative used two straps to lift the PCU up and over the fence and place it on site.		



A photograph showing a yellow crane lifting a large, grey, rectangular metal enclosure (PCU) from the back of a semi-truck. The crane is positioned on the left side of the frame, and the PCU is suspended in the air by two straps. The semi-truck is parked on a dirt or gravel surface. In the foreground, two workers wearing safety vests are visible, one looking up at the PCU. A utility pole is on the right side of the frame. The background shows trees and a building.

Photo No. <b>3</b>	Date: 09/22/2016	Time: 1039	
Direction: West			
Description:  The PCU was placed over the conduit coming up at the trench and placed on 4X4's that were used to support the bottom as well as raise the PCU above the ground.			



<b>Photo No.</b> <b>4</b>	<b>Date:</b> 09/22/2016	<b>Time:</b> 1306
<b>Direction:</b>  Northeast		
<b>Description:</b>  2 auto transformers (ATX-1 and ATX-3) as well as a spool of Type W 350 cable was delivered via semi-truck.		



<b>Photo No.</b> <b>5</b>	<b>Date:</b> 09/22/2016	<b>Time:</b> 1308
<b>Direction:</b>  Northwest		
<b>Description:</b>  The blower was delivered via semi and placed with the crane. Eventually it will be pushed into the building so muffle the sound for the residents next door.		



<b>Photo No.</b> <b>6</b>	<b>Date:</b> 09/22/2016	<b>Time:</b> 1525
<b>Direction:</b>  Northeast		
<b>Description:</b>  The condenser unit and cooling towers arrived on site via semi-truck. Creative crane use the same technique to lift the condenser unit as they did the PCU.		





<b>Photo No.</b> <b>7</b>	<b>Date:</b> 09/22/2016	<b>Time:</b> 1535	
<b>Direction:</b>  West			
<b>Description:</b>  Control panel and primary knockout tank inside of the condenser unit.			

Photo No. 8	Date: 09/22/2016	Time: 1543	
Direction: South			
Description:  The cooling towers were placed on top of the condenser unit by Creative Crane.			

# DAILY CONSTRUCTION REPORT

**Date:** 09/23/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site  
Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** Cloudy 65 degrees Fahrenheit, forecast calls for mid 70s with Cloudy skies

**Report Author:** Andrew Schamber (CDM Smith)

**Other personnel/visitors onsite:** Jeff Riffe (TRS), Ted Hughley (TRS), Kevin Riffe (TRS)

## Work Performed Today by Contractor:

### TRS and Subcontractors

- TRS changed configuration on PCU from a "Y" configuration to a "Delta" configuration in order to meet site specific conditions.
- TRS installed the hoods on the east side of the PCU as well as planned out piping diagrams for use next week.
- TRS performed general site cleaning and maintenance which included chaining the dumpster shut. Mini excavator will be mobilized off site early next week.
- TRS changed oil and greased belts as well as generally cleaned the blower unit.

### Additional Notes and Observations:

- None.

### Specific Inspections Performed and Results of these Inspections:

- No inspections were performed today.

### Type and Location of Tests Performed and Results of these Tests:

- No tests were performed today.

### Verbal Instructions Provided to the Contractor (s) on Construction Deficiencies or Retesting Required:

- No instructions were provided today.

### Delivery of Equipment and Materials:


- No deliveries were made today.

### Potential Work for next week:

- TRS plans to start connecting equipment together and placing the rest of the electrode



cable near remaining electrodes that need cable. Work will begin at 0900 on September 26, 2016.

Photographic Log			Project: IEPA Rockford Area 4	Project Number: 80527
Photo No. 1	Date: 09/23/2016	Time: 0849		
Direction:  West				
Description:  Inside of the panel on ATX-1.				

# DAILY CONSTRUCTION REPORT

**Date:** 09/26/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site  
Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** Sunny and breezy, 62 degrees Fahrenheit, forecast calls for upper 60s with sunny skies

**Report Author:** Andrew Schamber (CDM Smith)

**Other personnel/visitors onsite:** Jeff Riffe (TRS), Ted Hughley (TRS), Brad Morris (TRS), John Grabs (CDM Smith)

## Work Performed Today by Contractor:

### TRS and Subcontractors

- Slow start to work today. TRS connected piping on top of the condenser between the two cooling towers.
- Another spool of Type W 350 electrode cable was brought on to the site by Jeff Riffe (TRS) from Brownsburg, IN.
- Vent hood was installed on north side of condenser.
- Jumper cables were installed on PCU going to transformers (ATX-1 and ATX-2). 2 cables were attached to each phase (3 phases) with one cable going to ATX-1 and the other cable to ATX-2.
- Electrode cables from the "L" and "M" electrode rows (inside of building) were attached to the PCU. Each electrode cable was attached to an amp trap then to its respective phase landing plate.

## Additional Notes and Observations:

- None.

## Specific Inspections Performed and Results of these Inspections:

- No inspections were performed today.

## Type and Location of Tests Performed and Results of these Tests:

- No tests were performed today.

## Verbal Instructions Provided to the Contractor (s) on Construction Deficiencies or Retesting Required:

- No instructions were provided today.


## Delivery of Equipment and Materials:



- UPS delivered one box for TRS.

**Potential Work for Tomorrow:**

- TRS plans to start landing cable on PCU and/or transformers. They also plan to start connecting CPVC pipe to condenser unit. Bodine plans on putting their pump back in Extraction Well 3 and TRS plans on installing their cooling loop inside of the well. Work will begin at 0700 on September 27, 2016.

Photographic Log			Project: IEPA Rockford Area 4	Project Number: 80527
Photo No. <b>1</b>	Date: 09/26/2016	Time: 1330		
Direction:				
East				
Description:				
Control panel and water softener inside of the condenser unit.				

# DAILY CONSTRUCTION REPORT

**Date:** 09/27/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** Sunny 49 degrees Fahrenheit, forecast calls for mid 60s with partly cloudy skies

**Report Author:** Andrew Schamber (CDM Smith)

**Other personnel/visitors onsite:** Jeff Riffe (TRS), Ted Hughley (TRS), Brad Morris (TRS), Mike Jackson (Jackson Welding), Brett Baker (Bodine), Troy McFate (Bodine), Bloyer Pump and Well, ComED (Electric Company)

## Work Performed Today by Contractor:

### TRS and Subcontractors

- Mike Jackson was onsite today welding the bolt back on to electrode M6. Electrode head had to be removed and over-sleeve cut.
- Bodine was onsite removing pump from EX-001 for cleaning and placing pump back in EX-003. TRS installed their cooling loop inside of EX-003 and pump was set in well. Cooling loop extended down to 42.5 feet below ground surface (which is below pump and shroud) with ¾ inch PEX from 0 to 37.5 feet below ground surface and transitioned to ½ inch PEX from 37.7 to 40 feet below ground surface. RTD's (temperature probes) were also placed in EX-003 which were set at 10 and 20 feet below ground surface.
- ComED was onsite to take a look at the line and power pole. They will be back onsite later this week to energize line.
- 9 bolts on various electrode heads popped off of the top of the electrode (probably at different times throughout the last week). Mike Jackson will be onsite later this week to fix electrode heads.
- TRS finished landing electrode cables on PCU and both auto transformers (ATX-1 and ATX-2).

### Additional Notes and Observations:

- None.

### Specific Inspections Performed and Results of these Inspections:

- No inspections were performed today.

### Type and Location of Tests Performed and Results of these Tests:

- No tests were performed today.



**Verbal Instructions Provided to the Contractor (s) on Construction Deficiencies or Retesting Required:**

- No instructions were provided today.

**Delivery of Equipment and Materials:**

- UPS delivered four boxes for TRS.

**Potential Work for next week:**

- TRS plans to start putting together pipe for vapor and water recovery. This pipe will connect to the recovery pipes coming from the electrodes and connect to the condenser and then to the blower. Work will begin at 0700 on September 28, 2016.


Photographic Log			Project: IEPA Rockford Area 4	Project Number: 80527
Photo No. 1	Date: 09/27/2016	Time: 1127		
Direction:  N/A				
Description:  Drip loop was installed in EX-003 to 42' below ground surface and consisted of 3/4" PEX tubing to 35' and 1/2" PEX tubing from 35' to 42'. The tubing was brought through the plastic cover and into the manhole.				

Photo No. <b>2</b>	Date: 09/27/2016	Time: 1354
Direction:  North		
Description:  Electrode cable was brought down between electrode rows. This electrode run is between row "G" and "H".		





Photo No. <b>3</b>	Date: 09/27/2016	Time: 1606	
Direction: West			
Description:  All electrode cables attached to Amp-Traps and attached to phase plates on the PCU.			

# DAILY CONSTRUCTION REPORT

**Date:** 09/28/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** Partly cloudy 51 degrees Fahrenheit, forecast calls for low 60s with partly cloudy skies with a chance of rain

**Report Author:** Andrew Schamber (CDM Smith)

**Other personnel/visitors onsite:** Jeff Riffe (TRS), Ted Hughley (TRS), Brad Morris (TRS), Mike Jackson (Jackson Welding), ComED (Electric Company)

## Work Performed Today by Contractor:

### TRS and Subcontractors

- Mike Jackson was onsite today talking different alternatives for replacing bolts on electrode heads. He will be back onsite tomorrow (9/29/16) to weld bolts back on.
- TRS finished connecting recovery pipe to condenser and blower. 6" CPVC pipe connects to the recovery line from the electrodes at the south end of the building and runs to the north side of the condenser unit. From there CPVC pipe was connected to the south of the condenser unit, through the garage door opening to the blower that is located inside of the building.
- ComED was onsite to energize power lines that run to PCU.
- TRS built one stand made of fiberglass wall mounting rack to hold the control box for the drip system. A temperature control box was placed in the "K" row of electrodes on a pre-built rack out of the same material.

## Additional Notes and Observations:

- None.

## Specific Inspections Performed and Results of these Inspections:

- No inspections were performed today.

## Type and Location of Tests Performed and Results of these Tests:

- No tests were performed today.

## Verbal Instructions Provided to the Contractor (s) on Construction Deficiencies or Retesting Required:

- No instructions were provided today.



**Delivery of Equipment and Materials:**

- UPS delivered one box for TRS.

**Potential Work for Tomorrow:**

- Mike Jackson (Jackson Welding) will be back on site to fix the bolts on 9 of the electrode heads. TRS plans to connect the blowdown pipe coming out of the trench to the condenser unit (2" CPVC). Work will begin at 0700 on September 29, 2016.


Photographic Log			Project: IEPA Rockford Area 4	Project Number: 80527
Photo No. <b>1</b>	Date: 09/28/2016	Time: 1113		
Direction:				
South				
Description:				
The 6" CPVC recovery pipe runs along the building and angles up at a 22 degree angle into the condenser unit.				



Photo No. <b>2</b>	Date: 09/27/2016	Time: 1459	
Direction:			
North			
Description:			
6" PVC pipe goes in to the blower (bottom) and 6" CPVC pipe comes out (top).			

Photo No. <b>3</b>	Date: 09/27/2016	Time: 1459	
Direction: South			
Description:  6" PVC pipe runs out of the south side of the condenser to the blower then from the blower will be connected to the VGAC vessel when it arrives.			

# DAILY CONSTRUCTION REPORT

**Date:** 09/29/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** Cloudy, cool, 58 degrees Fahrenheit, forecast calls for mid 60s with cloudy skies with a chance of rain

**Report Author:** Andrew Schamber (CDM Smith)

**Other personnel/visitors onsite:** Jeff Riffe (TRS), Ted Hughley (TRS), Brad Morris (TRS), Mike Jackson (Jackson Welding)

## Work Performed Today by Contractor:

### TRS and Subcontractors

- Mike Jackson was onsite today welding bolts back on 9 electrode heads (E3, E4, E5, F4, H3, H6, J3, J5, and K6).
- TRS put together the blowdown line which runs from the trench and connects to the condenser unit (2" CPVC).
- Ted Hughley brought the primary and secondary LGAC (Liquid Granular Activated Carbon) vessels (picked up from a site in Des Plaines). TRS piped both together and connected them to the north side of the condenser unit using 1" CPVC pipe.
- TRS replaced a breaker inside of the PCU. After replacement the main disconnect was closed in order for them to bump test equipment. The following equipment was bump tested:
  - Blower fan on cooling tower 1
  - Blower fan on cooling tower 2
  - Blower fan on blower unit inside of building
- TRS ran the rest of the drip line (3/4" PEX tubing) which was zip tied to the recovery tubing coming from the electrode field and connected to the condenser unit.
- TRS placed "High voltage" signs as well as general warning signs around the site.

### Additional Notes and Observations:

- None.

### Specific Inspections Performed and Results of these Inspections:

- No inspections were performed today.

### Type and Location of Tests Performed and Results of these Tests:

- No tests were performed today.



**Verbal Instructions Provided to the Contractor (s) on Construction Deficiencies or Retesting Required:**

- No instructions were provided today.

**Delivery of Equipment and Materials:**

- No deliveries were made today.

**Potential Work for Tomorrow:**

- General site cleaning as well as general site maintenance will be done. Work will begin at 0700 on September 30, 2016.



Photographic Log			Project: IEPA Rockford Area 4	Project Number: 80527
Photo No. 1	Date: 09/29/2016	Time: 1052		
Direction:				
East				
Description:				
One of two RTD (temperature control boxes) placed on site. All of the temperature sensors are connected to one of the two boxes which then connects to the site computer on site.				

Photo No. <b>2</b>	Date: 09/29/2016	Time: 1639
Direction:  South		
Description:  The primary (left) and secondary (right) LGAC (Liquid Granular Activated Carbon) vessels were hard piped to the condenser unit using 1" CPVC pipe.		



# DAILY CONSTRUCTION REPORT

**Date:** 09/30/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site  
Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** Cloudy, misty, 60 degrees Fahrenheit, forecast calls for mid 60s with cloudy skies with a chance of rain

**Report Author:** Andrew Schamber (CDM Smith)

**Other personnel/visitors onsite:** Jeff Riffe (TRS), Ted Hughley (TRS), Brad Morris (TRS),

## **Work Performed Today by Contractor:**

### **TRS and Subcontractors**

- TRS performed general site clearing and cleaning in preparation for system start up next week.
- TRS connected remaining drip tube system. 3/4 inch PEX was connected to drip system near 6" vapor recovery pipe and ran along the recovery pipe where it connected to the condenser unit.
- Over sleeve was replaced on electrode M6 and grouted into place.

## **Additional Notes and Observations:**

- None.

## **Specific Inspections Performed and Results of these Inspections:**

- No inspections were performed today.

## **Type and Location of Tests Performed and Results of these Tests:**

- No tests were performed today.

## **Verbal Instructions Provided to the Contractor (s) on Construction Deficiencies or Retesting Required:**

- No instructions were provided today.

## **Delivery of Equipment and Materials:**

- No deliveries were made today.



**Potential Work for Next Week:**

- TRS plans to get the site ready for system start up. Work will begin at 1100 on October 3, 2016.

# DAILY CONSTRUCTION REPORT

**Date:** 10/3/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site  
Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** Sunny 66 degrees Fahrenheit, forecast calls for mid 70s with sunny conditions

**Report Author:** Andrew Schamber (CDM Smith)

**Other personnel/visitors onsite:** Jeff Riffe (TRS), Brad Morris (TRS), Dave Miller (TRS)

## Work Performed Today by Contractor:

### TRS and Subcontractors

- TRS built last remaining rack for interlock box. This control box is connected to each piece of equipment on site and shuts equipment down if anything is not running properly.
- Drip loop was connected to electrodes J6, K7, and L7. Solenoid valves and drip tubes are now connected to all of Zone 1 and Zone 2 electrodes.
- Vapor sample ports were attached to all of the VP wells onsite. The vapor sample ports were tapped and screwed into PVC dome caps which were then placed on the well.
- Holes were drilled for recovery tubes, electrode cable, and drip tube in the over sleeve on electrode M6.

## Additional Notes and Observations:

- None.

## Specific Inspections Performed and Results of these Inspections:

- No inspections were performed today.

## Type and Location of Tests Performed and Results of these Tests:

- No tests were performed today.

## Verbal Instructions Provided to the Contractor (s) on Construction Deficiencies or Retesting Required:

- No instructions were provided today.


## Delivery of Equipment and Materials:


- No deliveries were made today.

**Potential Work for Tomorrow:**

- More small tasks will be completed tomorrow including blowdown pipe construction, placing labels, programming system, etc. Work will begin at 0700 on October 4, 2016.



<b>Photographic Log</b>			Project: <b>IEPA Rockford Area 4</b>	Project Number: <b>80527</b>
<b>Photo No.</b> <b>1</b>	<b>Date:</b> 10/03/2016	<b>Time:</b> 1147		
<b>Direction:</b> North				
<b>Description:</b>  One of the warning signs up on the exterior of the site warning of the dangers that are present at the site.				

<b>Photo No.</b> <b>2</b>	<b>Date:</b> 10/03/2016	<b>Time:</b> 1234	
<b>Direction:</b> N/A			
<b>Description:</b>  Solenoids were placed on the drip tubes attached to Zone 1 and Zone 2 electrodes. These solenoids will release water to the sand pack on select electrodes if the sand starts to dry up and current starts to drop.			

# DAILY CONSTRUCTION REPORT

**Date:** 10/4/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site  
Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** Cloudy 64 degrees Fahrenheit, forecast calls for low 70s with partly cloudy conditions

**Report Author:** Andrew Schamber (CDM Smith)

**Other personnel/visitors onsite:** Jeff Riffe (TRS), Brad Morris (TRS), Jason (TRS), Dave Miller (TRS), Amy Wagner (TRS)

## Work Performed Today by Contractor:

### TRS and Subcontractors

- TRS placed carbon in LGAC (Liquid Granular Activated Carbon) vessels. Each vessel contains 3.75 bags of carbon (50 lb bags)
- TRS connected the blowdown pipe to the condenser unit. The 2" CPVC pipe transitions to a 1" CPVC pipe at the condenser.
- Over sleeves were placed around groundwater monitoring wells. All over sleeves both on groundwater monitoring wells and temperature monitoring wells were grouted into places using Type 1 Portland cement.
- Drip loop was connected to the condenser unit. Drip loop consists of 3/4" PEX tubing and connects Zone 1 and Zone 2 electrode fields (M5, M6, L4, L5, L6, K3, K4, K5, K6, K7, J3, J4, J5).
- Pitot tubes were placed in each of the 6" CPVC pipes coming from the blower unit.
- High voltage stickers were placed on all wells (electrodes, groundwater monitoring wells, vapor monitoring wells, and temperature monitoring wells).
- Solenoid cables were ran from electrodes in Zone 1 and Zone 2 and landed on the drip control box.
- Transducers were placed in GWP-L4 (set at 41' below ground surface), GWP-K3 (set at 42' below ground surface), GWP-G5 (set at 42' below ground surface), GWP-H6 (set at 42' below ground surface), GWP-F3 (set at 42' below ground surface).

### Additional Notes and Observations:

- None.

### Specific Inspections Performed and Results of these Inspections:

- No inspections were performed today.

### Type and Location of Tests Performed and Results of these Tests:

- No tests were performed today.

**Verbal Instructions Provided to the Contractor (s) on Construction Deficiencies or Retesting Required:**

- No instructions were provided today.


**Delivery of Equipment and Materials:**


- FedEx delivered one box for TRS and UPS delivered 2 boxes for TRS.

**Potential Work for Tomorrow:**

- More small tasks will be completed tomorrow including the start of going through the Startup Checklist. Work will begin at 0700 on October 5, 2016.



<b>Photographic Log</b>			Project: <b>IEPA Rockford Area 4</b>	Project Number: <b>80527</b>
<b>Photo No.</b> <b>1</b>	<b>Date:</b> 10/04/2016	<b>Time:</b> 0913		
<b>Direction:</b> East				
<b>Description:</b>  Sample ports were placed on top off all of the VP (Vapor Point) wells.				

<b>Photo No.</b> <b>2</b>	<b>Date:</b> 10/04/2016	<b>Time:</b> 1010	
<b>Direction:</b> South			
<b>Description:</b>  Drip loop was connected to the condenser unit with 1" PEX tubing.			

# DAILY CONSTRUCTION REPORT

**Date:** 10/5/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site  
Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** Partly cloudy 65 degrees Fahrenheit, forecast calls for mid 70s with partly cloudy conditions

**Report Author:** Andrew Schamber (CDM Smith)

**Other personnel/visitors onsite:** Jeff Riffe (TRS), Brad Morris (TRS), Jason (TRS), Dave Milan (TRS), Amy Wagner (TRS)

## Work Performed Today by Contractor:

### TRS and Subcontractors

- Well cover over monitoring well and vapor monitoring well in neighbor's yard was spray painted with flex seal so that there would not be a voltage potential or any kind of potential hazard.
- One 8' X 20' rolloff containing activated carbon was delivered for VGAC (Vapor Granular Activated Carbon) was delivered to the site.
- 2 large Fernco fittings were placed on the VGAC rolloff for connection to the condenser unit.
- 90 degree elbows were placed on the groundwater monitoring wells (GWP's) to protect the wiring and probe as well as to keep rain water from getting into the well.
- 2 stands were built out of lumber to hold 2 electrical boxes. These stands were placed on site to connect 4 transducer cables each so that they could be then fed to the PCU.
- TRS started working through part 1 of the Startup checklist.
- TRS also kept working on programming the system together so that they could remotely access the system. They anticipate to be completed with this task by Tuesday October 11, 2016.
- Security camera was placed on the east side of the PCU.
- 1" PEX was connected to the cooling loop coming out of the trench. Will be connected to condenser unit once fittings are purchased.

### Additional Notes and Observations:

- None.

### Specific Inspections Performed and Results of these Inspections:

- No inspections were performed today.

**Type and Location of Tests Performed and Results of these Tests:**

- No tests were performed today.

**Verbal Instructions Provided to the Contractor (s) on Construction Deficiencies or Retesting Required:**

- No instructions were provided today.


**Delivery of Equipment and Materials:**


- FedEx delivered one box for TRS and UPS delivered 2 boxes for TRS.

**Potential Work for Tomorrow:**

- More small tasks will be completed tomorrow including continuing to go through the Startup Checklist. Work will begin at 0700 on October 6, 2016.



Photographic Log			Project: IEPA Rockford Area 4	Project Number: 80527
Photo No. 1	Date: 10/05/2016	Time: 0929		
Direction:  West				
Description:  VGAC (Vapor Granular Activated Carbon) arrives on site from Evoqua Water Technologies. The rolloff is comprised of 2 internal chambers with 2 inlets located on the east side of the vessel and 2 outlets that are located on top of the vessel.				

<b>Photo No.</b> <b>2</b>	<b>Date:</b> 10/05/2016	<b>Time:</b> 0941	
<b>Direction:</b>  South			
<b>Description:</b>  TRS sprayed Flex Seal on the VP and groundwater monitoring well located in the adjacent property across Marshall Street. This was done to mitigate any potential voltage issues and to keep the public safe because of their location outside of the perimeter fence.			


<b>Photo No.</b> <b>3</b>	<b>Date:</b> 10/05/2016	<b>Time:</b> 1141	
<b>Direction:</b>  Northeast			
<b>Description:</b>  TRS placed PVC over sleeves on GWP wells with a 90 degree fitting on top to keep rain water from getting into the well.			

Photo No. 4	Date: 10/05/2016	Time: 1512
Direction:  West		
Description:  TRS had to build stands for 2 electrical boxes that were placed on site. These boxes are used as extenders so that new cable would not need to be placed.		



# DAILY CONSTRUCTION REPORT

**Date:** 10/6/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** Rainy, cool, 58 degrees Fahrenheit, forecast calls for mid 70s with cloudy conditions and a chance of rain throughout the day

**Report Author:** Andrew Schamber (CDM Smith)

**Other personnel/visitors onsite:** Jeff Riffe (TRS), Brad Morris (TRS), Jason (TRS), Dave Milan (TRS), Amy Wagner (TRS), Troy McFate (Bodine), Chris Thomas (TRS)

## Work Performed Today by Contractor:

### TRS and Subcontractors

- TRS installed tubing coming from both of the pitot tubes going to the pressure differential gauges as well as from the vapor pressure control box to a 4" CPVC recovery pipe.
- Both primary and secondary knock out tanks inside of the condenser unit were filled with water to check the low level float alarm, high level float alarm, and the high high float level alarm. This was done to make sure that all alarms were reading properly in control panel and to check if valves opened and closed when they should.
- 4 bags of activated carbon were placed in the second LGAC vessel near condenser unit.
- Part 1 of the startup checklist was completed. This included bump testing equipment, checking to make sure all the checks and balances of equipment were operating properly, signs were hung, proper lock out tag out procedures were in place, etc...
- TRS installed an exhaust stack on the NW corner of the condenser unit. The exhaust stack is connected to the outlet of the VGAC (Vapor Granular Activated Carbon) rolloff.
- TRS performed their first voltage test. The PCU was powered and set 130 volts into the electrode field. Per TRS protocol, no area should have a reading of 10 Volts or higher when read with a volt meter. Below are the findings from this test:
  - Metal pipe protruding from building near former loading dock had 32 volts on it.
  - Fitting on electrode J4 had 40 Volts on it
  - Grass field on the eastern side of the building had varying readings above 10 Volts
  - Grout inside of building had varying readings above 10 volts
- Voltage mitigation will take place either tomorrow or first thing next week.

### Additional Notes and Observations:

- None.

### Specific Inspections Performed and Results of these Inspections:

- No inspections were performed today.



**Type and Location of Tests Performed and Results of these Tests:**

- No tests were performed today.

**Verbal Instructions Provided to the Contractor (s) on Construction Deficiencies or Retesting Required:**


- No instructions were provided today.


**Delivery of Equipment and Materials:**

- 7 bags of activated carbon were delivered to the site for TRS and one box was delivered by UPS for TRS.

**Potential Work for Tomorrow:**

- More small tasks will be completed tomorrow including continuing to go through the Startup Checklist, which includes a second voltage test and voltage mitigation. Work will begin at 0700 on October 7, 2016.

<b>Photographic Log</b>			Project: <b>IEPA Rockford Area 4</b>	Project Number: <b>80527</b>
<b>Photo No.</b> <b>1</b>	<b>Date:</b> 10/06/2016	<b>Time:</b> 0929		
<b>Direction:</b> West				
<b>Description:</b>  A pressure interlock box was placed on site. This gauge monitors the pressure in the pipes and will shut down the system if pressure goes below or above certain pressures.				

<b>Photo No.</b> <b>2</b>	<b>Date:</b> 10/06/2016	<b>Time:</b> 0941	
<b>Direction:</b> West			
<b>Description:</b>  TRS installed a 360 degree camera on top of the east side of the PCU so that they can see what is going on remotely on site if they get an alarm. They will check this camera before starting the system remotely incase somebody is on site or there is a major visible issues with the equipment on site.			

# DAILY CONSTRUCTION REPORT

**Date:** 10/7/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** Mostly cloudy, 64 degrees Fahrenheit, forecast calls for mid 60s with partly cloudy conditions

**Report Author:** Andrew Schamber (CDM Smith)

**Other personnel/visitors onsite:** Jeff Riffe (TRS), Brad Morris (TRS), Jason (TRS), Dave Milan (TRS), Chris Thomas (TRS)

## Work Performed Today by Contractor:

### TRS and Subcontractors

- TRS installed insulation on the solenoids in Zone 2 (electrode in grassy area, "J" and "K" row of electrodes) to mitigate voltage issues.
- Metal wire was tied across the gate to connect both ends.
- Adaptors were glued onto VGAC system to connect tubing from condenser unit to VGAC rolloff.

### Additional Notes and Observations:

- None.

### Specific Inspections Performed and Results of these Inspections:

- No inspections were performed today.

### Type and Location of Tests Performed and Results of these Tests:

- No tests were performed today.

### Verbal Instructions Provided to the Contractor (s) on Construction Deficiencies or Retesting Required:

- No instructions were provided today.

### Delivery of Equipment and Materials:


- No deliveries were made today.

### Potential Work for Tomorrow:

- More small tasks will be completed next week including continuing to go through the Startup Checklist, which includes a more voltage testing and voltage mitigation. Work



will begin at 0900 on October 10, 2016.

<b>Photographic Log</b>			Project: <b>IEPA Rockford Area 4</b>	Project Number: <b>80527</b>
<b>Photo No.</b> <b>1</b>	<b>Date:</b> 10/07/2016	<b>Time:</b> 0846		
<b>Direction:</b>  N/A				
<b>Description:</b>  The solenoid valves in Zone 2 were wrapped with foam because it was discovered during a voltage survey that the metal valves were recording a voltage of 40 Volts which is greater than what they are allowed (10 V inside of fence and 5 V outside of fence).				

# DAILY CONSTRUCTION REPORT

**Date:** 10/10/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** Sunny, 61 degrees Fahrenheit, forecast calls for mid 70s with partly cloudy conditions

**Report Author:** Andrew Schamber (CDM Smith)

**Other personnel/visitors onsite:** Jeff Riffe (TRS), Brad Morris (TRS), Dave Milan (TRS), Chris Thomas (TRS), Brett Baker (Bodine)

## Work Performed Today by Contractor:

### TRS and Subcontractors

- Flexible tubing was connected to VGAC rolloff from condenser unit.
- VGAC system was bump tested.
- TRS replaced ¾" PEX with 1" PEX for cooling loop. Cooling loop now runs from condenser unit down the blowdown line and connects with tubing coming from trench.
- Another voltage test was done using a volt meter attached to a metal shunt which consists of a metal bar connected to a metal plate. Per TRS protocol readings cannot be above 10 volts inside of the fence and above 5 volts outside of the fence.
  - Grout around electrodes read between 9 and 11 volts. Grout will need to be sealed with flex seal or rubber mats will need to be placed around electrode over sleeve.
  - Abandoned groundwater well read at 9 volts. TRS placed a rubber mat over concrete
  - Concrete over electrodes along the west side of Marshall Street read between 8 and 9 volts. TRS plans to spray flex seal over concrete directly above electrode heads.

### Additional Notes and Observations:

- None.

### Specific Inspections Performed and Results of these Inspections:

- No inspections were performed today.

### Type and Location of Tests Performed and Results of these Tests:

- No tests were performed today.

### Verbal Instructions Provided to the Contractor (s) on Construction Deficiencies or Retesting Required:

- No instructions were provided today.





**Delivery of Equipment and Materials:**


- UPS delivered one box for TRS.

**Potential Work for Tomorrow:**

- TRS plans to finish mitigating voltage issues as well as install secondary containment underneath condenser unit to get the system ready for operation and the Operational Readiness Review. Work will begin at 0700 on October 11, 2016.

Photographic Log			Project: IEPA Rockford Area 4	Project Number: 80527
Photo No. 1	Date: 10/10/2016	Time: 1632		
Direction:				
South				
Description:				
TRS replaced the 3/4" PEX with 1" PEX for the drip loop and the cooling loop (which goes to EX-003). They also placed "T" fittings in the cooling loop line so that they could connect the drip line so that all of the lines connect at the condenser unit.				

<b>Photo No.</b> <b>2</b>	<b>Date:</b> 10/10/2016	<b>Time:</b> 1632	
<b>Direction:</b>  Northwest			
<b>Description:</b>  1" PEX for the cooling loop that runs down the blowdown line to the trench.			

<b>Photo No.</b> <b>3</b>	<b>Date:</b> 10/10/2016	<b>Time:</b> 1727	
<b>Direction:</b>  Southwest			
<b>Description:</b>  The blower out CPVC pipe was connected to the inlet of the northern most chamber of the VGAC system. The outlet was then CPVC piped to the second inlet. The second outlet was then fitted so that it could be connected to 6" hose to an exhaust stack that was attached to the PCU. Each outlet and inlet was fitted with a Fernco fitting to reduce the 15" opening to a 6" opening.			

# DAILY CONSTRUCTION REPORT

**Date:** 10/11/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site  
Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** Cloudy, 56 degrees Fahrenheit, forecast calls for mid 60s with partly cloudy conditions

**Report Author:** Andrew Schamber (CDM Smith)

**Other personnel/visitors onsite:** Jeff Riffe (TRS), Brad Morris (TRS), Dave Milan (TRS), Chris Thomas (TRS), Brett Baker (Bodine), Troy McFate (Bodine), John Grabs (CDM Smith), Karen Kirchner (EPA), Michael Haggitt (IEPA)

## Work Performed Today by Contractor:

### TRS and Subcontractors

- Chris Thomas (TRS) performed the Operational Readiness Review for IEPA today. Gave tour of site and a rundown of what operations will consist of on site.
- Flex seal was applied to "B" row of electrodes along west side of Marshall St. Another voltage test was done but voltage readings were still too high. TRS then applied Leak Seal made by Rustoleum which was poured onto the concrete from a can and spread with a paint roller. Will perform another voltage test in the morning after everything as dried.
- Secondary containment underneath condenser unit was erected.
- Air was bled from cooling loop line.
- Grout on electrodes inside of the building and in the grassy area outside of the building was sprayed with clear Flex Seal.

### Additional Notes and Observations:

- None.

### Specific Inspections Performed and Results of these Inspections:

- IEPA was onsite to inspect operation and give the go ahead for operation to start sometime this week. Operation will begin after a formal letter has been submitted.

### Type and Location of Tests Performed and Results of these Tests:

- No tests were performed today.

### Verbal Instructions Provided to the Contractor (s) on Construction Deficiencies or Retesting Required:

- No instructions were provided today.





**Delivery of Equipment and Materials:**

- FedEx delivered one cooler for TRS.

**Potential Work for Tomorrow:**

- TRS plans to finish mitigating voltage issues in Marshall St. Security system will be updated and Evoqua will be onsite to seal leaks in VGAC rolloff. Work will begin at 0700 on October 12, 2016.

Photographic Log			Project: IEPA Rockford Area 4	Project Number: 80527
Photo No. 1	Date: 10/11/2016	Time: 1412		
Direction:  Northwest				
Description:  TRS performing a voltage survey of concrete in Marshall St. Voltage readings ranged between 8 and 9 Volts. Issues will have to be mitigated because per TRS protocol no readings can be above 5 V.				

<b>Photo No.</b> <b>2</b>	<b>Date:</b> 10/11/2016	<b>Time:</b> 1413	
<b>Direction:</b>  South			
<b>Description:</b>  Concrete was first sprayed with Flex Seal. TRS checks dry and wet conditions. Flex Seal did not work so TRS will have to do more mitigation in Marshall St.			

# DAILY CONSTRUCTION REPORT

**Date:** 10/12/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site  
Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** Cloudy, 60 degrees Fahrenheit, forecast calls for mid 60s with cloudy conditions and a chance of rain this afternoon

**Report Author:** Andrew Schamber (CDM Smith)

**Other personnel/visitors onsite:** Jeff Riffe (TRS), Brad Morris (TRS), Brett Baker (Bodine), Troy McFate (Bodine), Evoqua (Carbon Supplier)

## Work Performed Today by Contractor:

### TRS and Subcontractors

- TRS check voltage readings to the "B" row of electrodes which were covered with Leak Seal made by Rustoleum. Voltage readings ranged from 0 to 4 Volts so TRS plans to seal the remaining concrete in Marshall St. with Leak Seal sometime next week. In the meantime, the "B", "C", and "D" rows of electrodes were disconnected at the PCU so that operation could begin this week. They will be brought back online once the concrete is sealed and rechecked with shunt.
- Evoqua was on site today to seal leaks in the VGAC rolloff. They applied epoxy from a squeeze tube around both plates on the north and south sides of the rolloff. Epoxy did not work. Evoqua will be back on site to repair.
- Wifi was connected at the site and an antennae was placed on the top side of the PCU near the 360 degree camera.
- Temperature sensors were installed in the blower return line and the effluent stack on the condenser unit.
- TRS sent water down blowdown line to Bodine's treatment system. Water was successfully received with no issues.
- TRS started to update security system with new sensors that were placed around the site.

### Additional Notes and Observations:

- None.

### Specific Inspections Performed and Results of these Inspections:

- No inspections were made today

### Type and Location of Tests Performed and Results of these Tests:

- No tests were performed today.



**Verbal Instructions Provided to the Contractor (s) on Construction Deficiencies or Retesting Required:**


- No instructions were provided today.


**Delivery of Equipment and Materials:**

- No deliveries were made today.

**Potential Work for Tomorrow:**

- TRS plans to finish updating security system and start collecting data from the system and updating spreadsheets to make sure everything is in good operating order. Evoqua will be back on site next week to replace metal plates and gaskets on both ends of the rolloff. Work will begin at 0700 on October 13, 2016.

Photographic Log			Project: IEPA Rockford Area 4	Project Number: 80527
Photo No. 1	Date: 10/12/2016	Time: 0736		
Direction:				
North				
Description:				
Leak Seal was spread on concrete over “B” row of electrodes as well as trench between “B” and “C” rows of electrodes. The Leak Seal came in a can and was spread using a paint roller.				

<b>Photo No.</b> <b>2</b>	<b>Date:</b> 10/12/2016	<b>Time:</b> 1052	
<b>Direction:</b>  North			
<b>Description:</b>  New sensors were placed on site around the perimeter of the site. These sensors will shut down the PCU which shuts down the entire system if the sensor line is broken.			

# DAILY CONSTRUCTION REPORT

**Date:** 10/13/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site  
Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** Sunny, cold, 38 degrees Fahrenheit, forecast calls for mid 50s with skies

**Report Author:** Andrew Schamber (CDM Smith)

**Other personnel/visitors onsite:** Brad Morris (TRS), Amy Wagner (TRS), John Grabs (CDM Smith)

## **Work Performed Today by Contractor:**

### **TRS and Subcontractors**

- TRS fixed security system issues. The new security sensors now shut down the PCU if the barrier is tripped.
- An Amp Survey was completed at the PCU phase plates, electrode heads, and auto transformers.
- Cable was changed to different taps on PCU in order to supply the correct current to the electrode field.
- TRS having issues with stray voltage on phase plates of PCU when power is turned off. They think it may be some sort of wiring issues inside of the PCU. Will have to wait until early next week to get the system running while it is unattended.

## **Additional Notes and Observations:**

- None.

## **Specific Inspections Performed and Results of these Inspections:**

- No inspections were made today

## **Type and Location of Tests Performed and Results of these Tests:**

- No tests were performed today.

## **Verbal Instructions Provided to the Contractor (s) on Construction Deficiencies or Retesting Required:**

- No instructions were provided today.

## **Delivery of Equipment and Materials:**



- No deliveries were made today.

**Potential Work for Tomorrow:**

- Evoqua will be onsite to seal leaks in VGAC rolloff. Stray voltage issues will be mitigated and fine-tuned. Work will begin at 0900 on October 17, 2016.

# DAILY CONSTRUCTION REPORT

**Date:** 10/17/2016

**Project Title:** Southeast Rockford Area 4 Soil & Groundwater Contamination Superfund Site Electrical Resistance Heating (ERH) Remedial Action being performed by TRS Group, Inc. (TRS)

**Location of Work:** Rockford, Illinois

**Weather:** Cloudy, 71 degrees Fahrenheit, forecast calls for upper 70s with cloudy skies

**Report Author:** Andrew Schamber (CDM Smith)

**Other personnel/visitors onsite:** Brad Morris (TRS), Evoqua (Carbon Supplier), Brett Baker (Bodine)

## Work Performed Today by Contractor:

### TRS and Subcontractors

- TRS fixed voltage issues where unexpected voltage was being read on the PCU enclosure. A wire had come loose from a thermal couple inside of a transformer in the PCU sending voltage to the entire enclosure. Issue was resolved and system was turned on at 1030 on Friday October 14, 2016.
- Brett Baker (Bodine) was onsite to discuss planned groundwater extraction system maintenance that would be occurring weekly. Bodine will be changing out their bag filters once a week (tentatively planned for Monday's) and wanted to make sure TRS was aware that they may be sent an alarm because the extraction system has to be turned off during bag changing activities.
- Evoqua was onsite today to fix issues with leaks in the VGAC rolloff. Evoqua used a vacuum to remove carbon from each vessel (2 internal compartments) and placed carbon in separate bags to be added back to the rolloff once issues is resolved, removed steel plates, and removed rubber gasket on each end. The gaskets that they brought with them were too small for the opening on either side. They plan to come back to the site on Tuesday October 18, 2016, with a roll of rubber matting so that they can cut it to fit each end of the rolloff.

## Additional Notes and Observations:

- None.

## Specific Inspections Performed and Results of these Inspections:

- No inspections were made today

## Type and Location of Tests Performed and Results of these Tests:

- No tests were performed today.

**Verbal Instructions Provided to the Contractor (s) on Construction Deficiencies or Retesting Required:**

- No instructions were provided today.


**Delivery of Equipment and Materials:**

- FedEx delivered a cooler for TRS.

**Potential Work for Tomorrow:**

- Evoqua will be back onsite, yet again, to seal leaks in the VGAC rolloff. TRS plans to collect air samples from various locations around the site as well as continue to collect operational data. Work will begin at 0700 on October 18, 2016.



<b>Photographic Log</b>			Project: <b>IEPA Rockford Area 4</b>	Project Number: <b>80527</b>
<b>Photo No.</b> <b>1</b>	<b>Date:</b> 10/17/2016	<b>Time:</b> 1049		
<b>Direction:</b> Southeast				
<b>Description:</b>  Evoqua was on site to seal the VGAC vessel that was leaking from the plates on the north and south ends of the rolloff. They started by removing the carbon with a vacuum and then taking the steel plates and rubber gaskets off.				

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## Appendix B

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### Pre-Design and Design Documentation

- Final Report Electrical Resistance Heating
- Soil Testing Report
- TRS' weekly reports



## Final Report Electrical Resistance Heating



**TRS**  
*Accelerating Value*

# **Final Report**

## **Electrical Resistance Heating**

**Southeast Rockford Groundwater  
Contamination Site Area 4  
Rockford, IL**

Issued: May 2017

TRS Group, Inc.  
PO Box 737  
Longview, WA 98632  
[www.thermalrs.com](http://www.thermalrs.com)



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## Appendices

Appendix A – Project Waste Stream Documentation

Appendix B – Right Of Way Permit (Permit #: ROW20161344)

## Abbreviations and Acronyms

°C	degrees Celsius
CDM	CDM Smith Inc.
COC	Contaminants of Concern
ComEd	Commonwealth Edison
CPVC	chlorinated polyvinyl chloride
CVOC	chlorinated volatile organic compounds
DCE	cis-1,2 dichloroethene
ERH	electrical resistance heating
ft <sup>2</sup>	square feet
ft bgs	feet below grade surface
GETS	Groundwater Extraction Treatment System
gpm	gallons per minute
HAPs	Hazardous Air Pollutants
hp	horsepower
IEPA	Illinois Environmental Protection Agency
in H <sub>g</sub>	inches of mercury
K&S	K&S Engineers
kW	kilowatt
kWh	kilowatt hour
lb	pounds
LGAC	liquid-phase granular activated carbon
LNAPL	light non-aqueous phase liquid
LTTD	low-temperature thermal desorption
MKD	MKD Electric, Inc.
MPE	multi-phase extraction
OSHA	Occupational Safety and Health Administration
PCE	perchloroethene
PCU	power control unit
PFD	process flow diagram
PID	photoionization detector
RTD	resistance temperature detector
scfm	standard cubic feet per minute
TCA	trichloroethane
TCE	trichloroethene
TMP	temperature monitoring point
TOC	total organic content
TRS	TRS Group, Inc.
TSI	Traffic Services, Inc.
µg/kg	micrograms per kilogram
VGAC	vapor-phase granular activated carbon
VR	vapor recovery
yd <sup>3</sup>	cubic yards

## EXECUTIVE SUMMARY

This report presents the results of the electrical resistance heating (ERH) remediation performed at 2630 Marshall Street, Rockford, Illinois (the Site). CDM Smith, Inc. (CDM) provided project oversight for the Illinois Environmental Protection Agency (IEPA). The primary goal of the remediation was to reduce 1,1,1-trichloroethane (TCA) soil concentrations to less than 9,118 micrograms per kilogram ( $\mu\text{g/kg}$ ) in soil as well as reduce concentrations of other relatively minor amounts of perchloroethene (PCE), trichloroethylene (TCE), cis-1,2 dichloroethene (DCE), and other chlorinated volatile organic compound (CVOC) breakdown products in the subsurface. The maximum historical concentration of TCA detected in soil was 510,000  $\mu\text{g/kg}$ .

Site lithology consists primarily of sand and is generally fine- to medium-grained down to approximately 30 feet below ground surface (ft bgs) and medium to coarse-grained below 30 feet bgs to the full depth of the treatment interval of 39 ft bgs. Groundwater is typically encountered at 25 ft bgs and groundwater flow is generally to the west. Contamination at the Site consists of contaminated soil (constituents listed above) with heavy staining and a light non-aqueous phase liquid (LNAPL) layer at the top of the aquifer.

Subsurface construction of the ERH system began on June 27, 2016, with system operations initiated on October 14, 2016. The final ERH system incorporated 39 individual electrodes with co-located vapor recovery (VR) wells. Subsurface temperatures were measured at seven temperature monitoring points (TMPs).

The ERH system operated for 125 days and applied 1,356,100 kilowatt hours (kWh) of energy to the treatment volume. On average, subsurface temperatures increased at a rate of 1.2 degrees Celsius ( $^{\circ}\text{C}$ ) per day as the average treatment area temperature increased from ambient to approximately 81.6 $^{\circ}\text{C}$ .

Recovered vapor samples were collected once per week by TRS during the first month of operations and twice per month through the remaining duration of operations and submitted for laboratory analysis. Based on photoionization detector (PID) measurements and measured flow rates, it is estimated that approximately 5,700 pounds of CVOCs and petroleum hydrocarbons were recovered from the treatment volume during ERH heating. Using stoichiometry, TRS calculated that approximately 150 pounds of TCA degraded in the subsurface via hydrolysis.

Soil sampling was conducted by TRS during the final stages of operations in order to confirm successful completion of the remediation. A total of 52 soil samples were collected at various depths at 18 locations. These soil samples were collected over the course of three individual soil sampling events and all analytical results were validated by CDM. The 18 locations were selected based on pre-ERH characterization, observations during drilling, and temperature profiles generated during operations.

A slight system modification was required based on the release of PCE emanating from existing hydrocarbon contamination on-site during heating. PCE was found at five times the previous known maximum soil concentration. To remediate these concentrations at depth quickly, TRS installed an air addition/steam induction (AA/SI) system.

Upon project completion, confirmatory soil sampling results from all intervals within the ERH treatment volume that were analyzed showed that the CVOCs of concern were at concentrations below the cleanup objectives. The average concentration of each contaminant of concern (COC) in soil was below the laboratory minimum detection limit, resulting in an overall average 99.97 percent reduction when using the laboratory minimum detection limit for each COC as the basis of this calculation.



## 1.0 INTRODUCTION

This report provides a summary of the design, installation, operation, sampling, and decommissioning of the ERH treatment system at the Southeast Rockford Groundwater Contamination Site Area 4, located in Rockford, Illinois (Site). The remediation was focused on a source area that was split between the interior of an existing unoccupied building including the associated lawn area outside of the building and a downgradient plume that extended below an asphalt parking lot and into a street.

The ERH treatment volume is located at 2630 Marshall Street in what is known as Source Area 4 and is one of four known source areas that are part of the Southeast Rockford Groundwater Contamination Superfund Site. Area 4 is situated in a mixed industrial, commercial, and residential area of Rockford, Illinois, located east of Marshall Street and south of Harrison Avenue. Area 4 is comprised of a building and an associated parking lot that formerly housed a machine shop. Per previous Site investigations, elevated concentrations of 1,1,1-trichloroethane (TCA) and other volatile organic compounds (VOCs) were detected in soil below the former loading dock area and in downgradient groundwater monitoring wells.

Since 2004, CDM Smith (CDM) has conducted several pre-design investigations that have included the collection of soil and groundwater samples. Contamination at the Site consists of contaminated soil with heavy staining and a light non-aqueous phase liquid (LNAPL) layer at the top of the aquifer.

Initially, an *ex situ* thermal remediation through excavation and onsite low-temperature thermal desorption (LTTD) was determined to be the appropriate remedy for the contaminated soils impacting the groundwater. However, after evaluating the challenges and cost of excavating and stockpiling soil on the small site, it was determined that employing ERH would provide a preferred method for remediating the contaminated soil. Electrodes were installed inside and outside the building without significant complications. Each of the 39 electrodes was installed vertically using traditional drilling techniques.

The ERH treatment area and other Site features are delineated on **Figure 1**.

## 2.0 PROJECT OBJECTIVES

The maximum pre-ERH concentration of TCA in soil was 510,000 micrograms per kilogram ( $\mu\text{g/kg}$ ). The goal of the remediation was to reduce TCA concentrations in soil to 9,118  $\mu\text{g/kg}$  or less. The remedial goals and maximum concentrations for all contaminants of concerns (COCs) at The Site are summarized below in **Table 1**.

**Table 1 COC Remedial Goals**

Contaminant	Remedial Goal ( $\mu\text{g/kg}$ )	Maximum Concentration ( $\mu\text{g/kg}$ )
Carbon tetrachloride	70	8,400
1,1-Dichloroethene	60	23,000
1,1,1-Trichloroethane	9,118	510,000
1,1,2-Trichloroethane	20	230
Trichloroethene	60	360
Tetrachloroethene	60	220

## 3.0 THE ERH PROCESS

During ERH, electrical current is passed through the soil and groundwater requiring chlorinated volatile organic compound (CVOC) removal. As power is applied to the remediation area, the soil's natural resistance to electrical current creates heat. In turn, the temperature of the soil increases within the remediation volume. In traditional ERH, enough energy is applied so that eventually groundwater is converted to steam. The phase

change from liquid (including contaminants adsorbed onto soil particles) to vapor liberates the target contaminants into the vapor stream. The *in situ* steam generated by ERH acts as a carrier gas to sweep contaminants to negative pressure vapor recovery (VR) wells. The VR system collects the steam (and target contaminants) for CVOC removal in the above ground equipment.

Once steam and soil vapors are collected by the VR system and removed from the subsurface, the steam mixture is conveyed by chlorinated polyvinyl chloride (CPVC) piping headers to the ERH condenser. At the ERH condenser, the recovered mixture is passed through a primary vapor/liquid separator to remove entrained moisture. Next, the mixture is passed through a water-cooled, non-contact heat exchanger and is cooled to near ambient temperatures. This reduction in temperature causes the steam to condense and allows CVOC vapors to continue to the CVOC vapor collection equipment to be collected on vapor-phase granular activated carbon (VGAC).

## 4.0 SITE PARAMETERS

The following sections detail the Site conditions contributing to the ERH application design.

### 4.1 Site Characteristics

Site lithology consists of primarily sand to the full depth of the treatment interval of 39 ft bgs. The sand is generally fine- to medium-grained down to approximately 30 ft bgs and medium- to coarse-grained below 30 ft bgs. Groundwater is typically encountered at 25 ft bgs and flow is generally to the west. CDM reported the geometric mean hydraulic conductivity of 150 ft/day ( $5.3 \times 10^{-2}$  cm/sec). Based on the horizontal and vertical profile of the contamination and site characteristics, the contamination was divided into three zones.

- Zone 1 consists of soil contamination and LNAPL below a portion of the building that is a high-bay garage. Significant contamination generally existed between 12 and 37 ft bgs, but was closer to the building foundation on the northern end of the garage. It is believed that some waste was deposited in this area prior to construction of the garage.
- Zone 2 consists of soil contamination and LNAPL in the former loading dock area. Contamination was originally encountered between 0.5 and 37 ft bgs, but the area was subsequently excavated down to 3 ft bgs. The excavated area was lined with plastic sheeting and backfilled with clean gravel. It is believed that this was the primary location where waste was deposited.
- Zone 3 consists of the area below the parking lot where significant contamination and LNAPL existed in approximately the top 10 feet of the aquifer. The transition between Zone 2 and Zone 3 is very abrupt indicating the waste deposited in Zone 2 essentially travelled downward until it encountered the water table and then migrated into Zone 3.

In addition to information provided to TRS by CDM soil electrical resistance testing (SERT) was conducted by TRS. During this process TRS applies low voltages to the soil volume to determine the resistance of the soil. This process allows TRS to estimate voltage that will be applied during actual operations and to ensure that electrode cabling is appropriately sized for the ERH treatment. TRS conducted SERT on September 6, 2016.

TRS had estimated that the total mass of CVOCs in the treatment region was approximately 2,000 pounds based on the reported average concentration of the primary COCs in soil. No mass in place estimate was provided by CDM. The original and as-built treatment areas and volumes are defined in **Table 2**.

**Table 2 Treatment Areas**

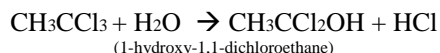
Treatment Area Identification	Original Estimate	As-Built
ERH Treatment Area (ft <sup>2</sup> )	8,523	8,523
ERH Treatment Volume (yd <sup>3</sup> )	6,100	6,100
Shallow Extent (ft bgs)	2 (Zone 1&2), 23 (Zone 3)	2 (Zone 1&2), 23 (Zone 3)
Deep Extent (ft bgs)	39	39

## 4.2 Total Organic Carbon (TOC) Content

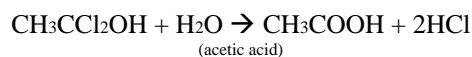
The type of contaminant and the desired remedial goal affect the energy, time, and cost to remediate a site. However, two subsurface parameters are particularly important: the amount of TOC and the presence of heavy hydrocarbons such as diesel, oil, or grease. TOC and hydrocarbons in general can preferentially adsorb VOCs in comparison to water, which is why activated carbon is used for vapor and water treatment of VOCs. The Site was known to contain heavy hydrocarbons within the treatment volume which was a partial focus of the treatment. The Site TOC content was determined to be 0.8 percent based on analytical results provided to TRS. This TOC is over three times the typical assumed TOC of 0.25 percent, but was determined not to be elevated enough to affect the remediation duration due to the hydrolysis component of remediating the primary COC of TCA and the increased rate at which TCA breaks down under elevated temperatures.

## 4.3 Hydrolysis

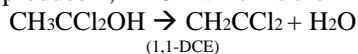
1,1,1-TCA breaks down in water at elevated temperatures via hydrolysis. 1,1,1-TCA has a degradation half-life of approximately 1 day at a temperature of 65 degrees Celsius (°C). This is also the same temperature that liquid 1,1,1-TCA azeotropically boils in contact with water, therefore hydrolysis will occur simultaneously during DNAPL boiling. The first step of the hydrolysis reaction is a substitution reaction where a chloride anion is substituted with a hydroxide anion extracted from water.



The 1-hydroxy-1,1-dichloroethane is very unstable and reacts quickly with water either by a substitution or elimination pathway. Hydrolysis by substitution is the primary pathway and approximately 50 to 80 percent of the 1-hydroxy-1,1-dichloroethane will convert into acetic acid by reaction through this pathway.



The acetic acid from the primary pathway serves as an electron donor for enhanced biodegradation of the down-gradient impacts after the project is completed. The remaining 20 percent to 50 percent of reaction proceeds by an elimination pathway to produce 1,1-DCE which is then recovered by steam stripping.



It is critical to not only reach temperatures that hydrolyze TCA to 1,1-DCE, but to also achieve water boiling that effectively strips the 1,1-DCE hydrolysis product and other VOCs like PCE and TCE from the groundwater.



## 5.0 ERH DESIGN APPROACH

TRS reviewed Site data prior to completing the ERH system design to confirm the preliminary parameters set forth in the request for proposal. TRS's remedial approach used ERH to heat the subsurface to facilitate the remediation of the primary COC in Site soil. TRS estimated that 790,000 kWh of electrical energy applied to the subsurface would be required to decrease the concentration COC contaminants below the remedial goals. The estimated electrical energy would be applied over a duration of approximately 8 weeks.

### 5.1 ERH System Components

A list of the ERH system components is provided in **Table 3**. A summary of the ERH process and supporting ancillary system components is also provided in the process flow diagram (PFD) illustrated on **Figure 2**.

**Table 3 ERH Treatment System Components**

System Component	Original	As -Built
2,000-kW PCU and data acquisition system	1	1
MPE Electrodes	39	39
Steam condenser and cooling tower	1	1
40-hp vapor recovery blower	1	1
13,000-pound VGAC vessels (1 vessel, 2 chambers)	1	2
200-pound LGAC vessels	2	2
TMPs/RTDs	7/44	7/44
Vapor recovery wells, co-located with electrodes	39	39
Groundwater Piezometers	8	8
Vapor Piezometers	8	8

### 5.2 Power Control Unit

The ERH system used a 2,000 kilowatt (kW) power control unit (PCU) to deliver the estimated treatment energy to the subsurface for heating and remediation. The PCU is contained in a weather-tight steel enclosure that provides security and electrical insulation. The PCU is designed for 100 percent cycle duty and is sized for a maximum power output of 2,000 kW. During ERH operation, the primary voltage is reduced to the appropriate level for optimum subsurface heating. As the subsurface is heated, this optimum voltage typically changes, and the PCU output is adjusted to those changes.

TRS required an existing 100-amp, three-phase electrical service supplied with the typical line voltage in the range of 12,470 to 13,800 volts to be brought further south down Marshall Street by Commonwealth Edison (ComEd) to the TRS equipment compound. TRS contracted MKD Electric (MKD) to make all the electrical connections between the ComEd utility service and the PCU. All ancillary ERH system treatment equipment was powered from the PCU through an internal ancillary equipment distribution panel. The PCU output was cabled directly to field located electrodes in a designed configuration so heat up and treatment could be achieved as uniformly as possible.

### 5.3 Electrodes

A total of 39 electrodes were used to couple the energy output by the PCU to the subsurface within the treatment areas as shown on **Figure 1**. The electrodes were constructed as multi-phase extraction (MPE) electrodes for delivery of energy to the subsurface while also being able to recover vapor, steam, groundwater, and LNAPL from the subsurface. The electrode design and layout concentrated energy to areas of known contamination; this approach conserved energy and increased the efficiency of the remediation. A summary of

the treatment interval is presented in **Table 2** above. Typical construction details for each electrode design are shown on **Figure 3a** through **Figure 3e**.

#### **5.4 Electrode Wetting System**

During operation, the area immediately surrounding each electrode had the potential for drying out, which may reduce the effectiveness of the electrode to transmit energy to the subsurface. This dry-out condition is addressed by periodically adding small amounts water to the electrode/soil interface. The ERH system was constructed to utilize a combination of treated water generated from condensed recovered steam and potable water. Water delivery to each electrode in need was carefully monitored to combat the effects of dry-out during ERH operations. In the design for this system, the electrode wetting equipment was only installed in Zones 1 and 2 as ERH treatment in these zones extended well into the vadose zone of the Site. When heating within the vadose zone, the system does not benefit from electrode wetting from groundwater and thus must introduce water to avoid the potential for drying out.

#### **5.5 Temperature Monitoring Points**

The ERH system used seven temperature monitoring points (TMPs) containing temperature sensors to track the progress of the ERH remedial efforts and provide continuous temperature monitoring within the subsurface treatment volume. The TMP locations are shown on **Figure 1**. Each TMP casing was constructed of 3/4-inch copper tube and installed to match the corresponding depth of remediation in the treatment area. A string of resistance temperature detector (RTD) sensors was inserted into the casing with each RTD spaced vertically in five-foot increments from the bottom of treatment interval. Zones 1 and 2 included a four-foot increment for the final shallow vertical increment. Construction details of typical TMPs are shown on **Figure 4a** through **Figure 4c**.

#### **5.6 Groundwater Depth Piezometers**

Four sets of groundwater depth piezometers were installed around the treatment area with each set containing a piezometer located inside the treatment area and one located outside the treatment area. The piezometers were located on the north, west, south, and east sides of the Site to demonstrate hydraulic control in an inward direction to the treatment area. Each piezometer was equipped with a pressure transducer which was placed into the water table at 40 ft bgs in a 2-inch stainless steel well below the heated zone to protect it from the boiling temperatures inside the treatment zone. Data from the piezometers was transferred to the Site computer for storage of data. The locations of the groundwater piezometers are shown in **Figure 1** and the construction details are shown in **Figures 5a** and **5b**.

#### **5.7 Vapor Piezometers**

Four vapor piezometers were installed within the vadose zone inside the treatment area and 4 were installed outside the treatment area to confirm that vapor recovery influence was maintained during the project. Each piezometer had a screened interval located at 5 ft bgs and the top of the piezometer was equipped with a port for collecting manual vacuum readings. The data from the vapor piezometers was collected weekly and transferred to the Site computer for data storage. The locations of the vapor piezometers are shown in **Figure 1** and the construction details are shown in **Figures 6a** and **6b**.

#### **5.8 Vapor Recovery and Treatment System**

The VR system consisted of a 40-horsepower (hp) rotary lobe positive displacement blower used to apply vacuum to the 39 co-located VR wells through a CPVC conveyance piping system. Sampling ports and gauges were installed to measure vacuum, flow, and temperature at the blower inlet. Temperature was measured by gauge at the blower outlet, and flow was measured using pitot tubes. The blower was capable of 1,000 standard cubic feet per minute (scfm) of airflow at 5 inches of mercury (in Hg) vacuum.

Vapor recovery piping was sized primarily at 2, 4, and 6-inch CPVC to move the vapor stream mixture of steam, air, and CVOC vapors through the conveyance piping system to the ERH condenser unit. Once the recovered vapor stream passed through the ERH condenser and blower, the vapors were treated through VGAC treatment vessels prior to atmospheric discharge. ERH process equipment details are presented on **Figure 2**.

## 5.9 Site Security

Since the treatment volume was partially located within a formerly occupied building and the remaining treatment area outside an adjacent building wall, two different security measures were employed. A vinyl-clad chain link fence with privacy screen was installed around the outside portion of the treatment area prior to operation of the ERH treatment system. In addition, the inside portion of the treatment area was delineated with orange caution fence. “Danger, High Voltage” signs were hung on the fence every 20 feet. A wireless, cellular based alarm system was installed by TRS around the perimeter of the ERH treatment area. The base unit was located in the PCU. The security alarm system was interlocked with the PCU and was set to automatically cease electrical energy delivery to the electrodes in the event of an unauthorized entry. A second motion sensitive video system was installed along the perimeter of the treatment area as well. If an intruder gained access to the treatment area, a 10 second video of the activity would be sent to a third party for review, and if necessary, the police would be notified. Access to the interior portion of the building was controlled by locked doors, but was also controlled by both security systems. Each entrance or access point to the treatment area within the building had a sensor and if unauthorized access was gained, the police were notified.

## 6.0 SYSTEM CONSTRUCTION

TRS contracted Blood Hound Inc. to locate subsurface utilities and clear the locations intended for drilling. This work was completed so that TRS could identify subsurface installation locations that could possibly be located within proximity of a buried utility. This work was completed in one day, June 27, 2016, and a report provided to TRS. JULIE, the public utility locating service, was also contacted and any exterior subsurface utilities were marked prior to drilling activities.

Site mobilization began the week of June 27, 2016, with the delivery of electrode materials as well as TRS’s mobile tool box. TRS worked most of the week preparing electrodes and other subsurface materials for installation as well as cleaning out the interior of the building in preparation for drilling activities. The work in the building included the relocation of much trash and debris as well as the removal of an existing loading dock.

During a preliminary Site walk, prior to the mobilization to the Site, it was determined that an existing loading dock would inhibit the installation of electrodes K7 and L7 as well as vapor piezometer L7. The loading dock which was comprised of a combination of concrete block, poured concrete, and large timbers sat at a higher elevation than the rest of the Site and thus created overhead issues for the safe operation of a drill rig. To facilitate an easier installation of the two mentioned electrodes and one vapor piezometer, TRS elected to remove the loading dock during the week of June 27<sup>th</sup> and to relocate the material further north into the building where it would not interfere with system construction.

The subsurface installation of the ERH system began on July 6, 2016, with interior drilling work being conducted by TRS’ drilling subcontractor, Terra Probe Environmental. TRS began the installation of 7 interior electrodes, 1 TMP, and 2 VMPs using hollow stem augers. Upon completion of the interior drilling TRS dismissed Terra Probe and mobilized a second drilling subcontractor, K&S Engineers, Inc. (K&S), to complete all drilling activities outside of the Site building. **Figure 1** presents the final electrode locations. The drilling work was completed on August 29, 2016.

Throughout the drilling process, TRS installed one-inch copper tubes within the electrode well casing for use in removing NAPL from the subsurface. Following the copper “slurp” tube installation and the associated well-head plumbing, each electrode boring location was completed with a grout seal approximately six inches thick. The electrode was isolated from incidental contact with the installation of a PVC oversleeve, set into the grout seal. The grout work was completed on the afternoon of August 26, 2016.

In addition to the drilling inside and outside of the building, TRS had 14 drilling locations that were located within Marshall Street. These locations were the last of the drilling focus as TRS wished to minimize the impact to the active roadway. TRS obtained a Right Of Way Permit (Permit #: ROW20161344) and contracted Traffic Services, Inc. (TSI) to shut down Marshall Street with the appropriate traffic and detour signage. The street was officially closed on Tuesday August 16, 2016, and remained closed through drilling and the associated trenching activities. All work was completed and Marshall Street was reopened to normal traffic operations on Friday September 9, 2016. Note that a copy of the Right Of Way Permit is included



During the later stages of the subsurface portion of the installation in Marshall Street, TRS also focused on surface aspects of the installation. The surface installation began on September 7, 2016. The surface installation activities included:

- Construction of electrode wetting system manifold;
- Vapor recovery manifold construction;
- Wiring of equipment and gauges;
- Wiring of TMP and drip field boxes, and
- Electrode supply cable connection.

Towards the end of the ERH system surface construction, TRS conducted the successful placement of each piece of the ERH process equipment. This included the PCU, condenser, cooling tower, two autotransformers, and 40-hp vacuum blower. TRS contracted Creative Crane & Rigging, Inc to set each piece of equipment and the equipment placement was successfully completed on Thursday September 22, 2016.

To protect the TRS equipment and materials, as well as maintain public safety during system construction and operation, a 6-foot tall, vinyl-clad, chain link fence with privacy screen was installed around the outdoor portion of the ERH treatment area and process equipment. A 16-foot gate was installed to provide access to TRS staff for operational activities as well as to provide access for larger tasks such as carbon vessel change-outs. The fence installation was completed on September 12, 2016. The surface installation of the ERH system was successfully completed on October 5, 2016. The electrodes, TMPs, equipment, and other Site features are shown on **Figure 1**.

A security system was installed along the fence line and surrounded the equipment compound and electrode areas both inside and outside of the building. The system consisted of five motion-detecting sensors. If the sensors detected movement within the coverage area, the PCU contactor would open and discontinue electrical energy application to the subsurface. If the perimeter security system was breached, TRS was notified by an automated telephone call.

In addition to the motion-detecting sensors, the security system also contained nine motion-activated cameras. If any of the cameras detected movement they recorded a 10-second video that was immediately e-mailed to both TRS and a third party security dispatch center. If the video depicted an unauthorized entry, the local police were contacted and dispatched to the Site. The Site also had an alternate camera mounted to the PCU so that the treatment area and equipment compound could be observed remotely. The camera was running in real time and could be accessed from off-site locations via any internet connection. The camera system installation, security system installation, and programming were completed on October 11, 2016.

A 13,000-pound VGAC vessel that is divided into two separate chambers (acting as two vessels) was delivered to the Site on October 12, 2016. It was installed on the effluent side of the vapor recovery blower in series (primary and secondary chamber).

## **7.0 ERH SYSTEM STARTUP**

ERH system startup is a key component of operation of the system. TRS takes extra precautions at this time to ensure a safe operating system is being deployed. The following sections detail this startup sequence.

### **7.1 Pre-startup Tasks**

Prior to start-up, a final quality assurance inspection of all piping and electrical connections was completed. Quality assurance inspections and testing were completed by TRS on the electrode cable connections, condenser components, transformer connections, TMP field box connections, VR blower, and PCU. TRS also completed the initial phase of the internal TRS Start-Up Safety Checklist and all associated tasks prior to commencing start-up operations.

All equipment were visually inspected for weld cracks or breaks, scrapes of protective coating, corrosion, structural damage, and inadequate installation or construction such as cracks, punctures, and damaged fittings. No discrepancies were identified.

## 7.2 System Startup

System startup and optimization began on October 5, 2016. This phase of the work consisted of energizing the condenser/heat exchanger, cooling tower, vacuum blower, temperature monitoring points, water addition control systems, and groundwater piezometer monitoring. This was followed up with functionality testing of the ERH equipment and interlocks and the evaluation of subsurface energy application.

The condenser was filled with water from the building's potable water source and operations were initiated. Items inspected included leak checks, functionality (hand/off/auto switches, float switches, valves), and the ability to maintain normal operations. The inspection of the system also verified the proper operational parameters (flow, differential pressures, and applied field vacuum) on each gauge and valve. Once proper operations of the components were confirmed, ERH equipment interlock testing commenced. Testing of the ERH equipment interlocks was completed on October 6, 2016, and it was confirmed that each interlock performed as designed.

TRS initiated electrical energy application to the treatment volume, via the electrodes, on October 6, 2016. The purpose of this testing was to evaluate the electrical characteristics of the treatment volume. This evaluation included:

- observations of cable/electrode amperages;
- applied voltages to the electrodes; and,
- an overall evaluation of the energy applied to the treatment volume.

Concurrent with the ERH system testing, ERH step-and-touch voltage safety tests were performed. This test was done to evaluate surface conditions for the presence of impressed, exposed voltages. Areas where personnel may walk or surfaces that could be touched were measured for exposed voltage potentials.

The ERH step-and-touch voltage testing identified that there were a few locations that exceeded the TRS 10-volt standard within the fenced area. The locations that contained exceedances of the 10-volt standard were comprised of a few of the water addition solenoids and some of the electrode grout seals in Zones 1 and 2. TRS mitigated these items by electrically insulating the affected valves eliminating the ability for an individual to come into contact with the valve. Subsequent surveys in wet and dry conditions confirmed that there were no other voltages exceeding the 10-volt limit within the fenced area.

TRS has a 5-volt maximum standard in public areas that fall outside of the installed access control perimeter fence. During ERH Step and Touch surveys, TRS measured voltages on the trench concrete seal on Marshall Street that exceeded the 5-volt limit in wet conditions. Although TRS had reduced the voltage considerably with the use of surface coatings, there remained a need to further mitigate the issue and, as a result, the nine electrodes in the street remained offline initially. With the electrodes in the street offline, the site was established as electrically safe and cleared for uninterrupted operations. The first day of uninterrupted operations was October 14, 2016.

In order to mitigate the voltage issues in the street, TRS contracted Stenstrom Excavation & Blacktop Group to install an asphalt cap over the concrete trenches in the street. The work had originally been planned to be completed at projects end as part of the site restoration, but TRS opted to complete this work early to create an electrically insulative barrier between the electrically conductive concrete surface and any possible contact by an individual. The work was completed on Wednesday, November 9, 2016. TRS visited the Site on Thursday November 10, 2016, and placed all nine electrodes back online. TRS conducted additional voltage safety tests at this time and the Site was established as electrically safe and cleared for operations with all 39 electrodes online.

## 8.0 ERH OPERATIONS

Full ERH system operations began on October 14, 2016. Operational parameters such as power application, subsurface temperatures, condensate production, vapor recovery parameters, and CVOC concentrations in the recovered subsurface vapors were routinely measured. This data was used to assess the efficiency of the ERH system and allow TRS personnel to target specific areas of the Site and optimize system performance. TRS was responsible for monitoring all soil, water, and process vapor sampling of the ERH system.

## 8.1 Electrical Energy Application

The application of electrical energy to the subsurface was optimized throughout the project in an effort to achieve the most efficient heat-up (and treatment) in the subsurface per unit of energy applied. Through weekly analysis of electrical power application, subsurface temperatures, and CVOC recovery data, the optimal rate of electrical power application was determined. Near continuous incremental adjustments were made to the ERH system to maintain an optimal processing rate within the ERH system limitations.

A total of 1,356,100 kWh of energy was applied to the treatment volume to achieve the remedial goals which exceeded the original TRS estimate of 790,000 kWh. Much of the additional energy required to remediate the Site was the result of additional days of operation required to achieve cleanup of soil at the deep extent of the treatment interval. Heating the soil at the bottom of the treatment interval was more difficult throughout system operations. It was the difficulty to heat the deep extent of the treatment interval that extended the duration of the remediation as the majority of the Site had met the remedial goals following the first confirmation soil sampling event. The average power level during energy application, when considering downtime, was 493 kW. The actual power level was less than the TRS original estimate of 616 kW. Energy application was near continuous during normal operations. In addition, the ERH process equipment used an additional 610,000 kWh of energy.

## 8.2 Subsurface Temperatures

Subsurface temperatures in the ERH treatment volume were measured and recorded daily at each of the seven TMPs. Each TMP contained temperature measurement sensors at 5-foot vertical increments, with the final shallow increment in Zones 1 and 2 being a 4-foot increment, to get representative temperature measurements from the target treatment volume. **Figure 7** provides the average temperature for each TMP during operations.

At the start of ERH operations, the average ambient subsurface temperature in the ERH treatment volume was 14.9°C. At the peak of Site heating, the average subsurface temperature was 81.6 °C on December 12, 2016. The highest individual temperature measurement from within the ERH treatment volume was 101.9°C, recorded at TMP F4 at a depth of 27 ft bgs on December 10, 2016.

Upon initial energy application, the average subsurface temperature rose rapidly, increasing at nearly 1 to over 2°C per day. The heat-up rate then naturally slowed as the subsurface within the treatment volume attained steaming conditions. This slowing of the heat-up rate is an indication of a significant change in subsurface conditions as more of the applied energy is used to accomplish phase change from liquid to vapor rather than increase subsurface temperatures. One thing of note was that due to high groundwater flow at depth there was some difficulty observed in heating the bottom of the treatment interval during system operations.

## 8.3 Vapor Treatment

All CVOCs recovered from the subsurface required treatment prior to discharge to the atmosphere as stipulated in the existing Site air permit. Air treatment was accomplished using VGAC and was monitored by TRS using a photoionization detector (PID) at least one time per week to provide an indication of system performance. Air permit compliance samples were also collected by TRS and sent off-site for laboratory analysis once a week for the first month of operations and bi-weekly the remainder of operations. The results were coupled with the PID analysis in determining carbon efficiency for permit compliance as well as determining the total VOC mass recovered from the the treatment volume. Based on the PID measurements, TRS calculated that approximately 5,700 pounds of petroleum hydrocarbons and CVOCs were recovered during treatment. PID readings collected during system operations are provided **Table 9**.

Based on the stoichiometry discussed in **Section 4.3**, TRS calculated that for every pound of 1,1 DCE produced and recovered, approximately 4.3 pounds of TCA was degraded via hydrolysis. Based on the laboratory analysis, TRS estimates that between 70 and 180 pounds of TCA were degraded, while about 500 pounds were recovered in the vapor phase during the first four weeks of operation.

During operations, TRS also monitored the hazardous air pollutants (HAPs) recovered from the subsurface and discharged to the atmosphere. Based on TRS remedial experience in the state of Illinois, the applicable or relevant and appropriate requirements (ARAR) is 35 Ill. Adm. Code 201.146, which provides an emission limit of less than 0.5 tons per year of combined hazard air pollutants. As a result TRS operated the vapor treatment system in such a manner to ensure that no more than 1,000 pounds of hazard air pollutant were discharged



during the operational phase of the project. Additionally, 35 IAC 215, Subpart K provides an emission limit of 8 pounds per hour of organic material into the atmosphere. Based on PID and Summa data collected, TRS calculated that approximately 280 pounds of HAPs were discharged to the atmosphere during treatment with the greatest hourly discharge rate only reaching approximately 0.39 pounds per hour.

#### 8.4 Vapor Recovery

The VR system consisted of a 40-hp positive displacement blower. The VR system operated to provide capture and appropriate treatment of air, steam, and soil vapors from the subsurface. The VR blower maintained an average vacuum of 5.3 in H<sub>g</sub> and a flow of 759 scfm as measured after the vacuum blower during ERH operations. The average flow rate was calculated using the flow rate measured daily by the automated data collection portion of the system and thus was the average measured over the full 125 days of system operation. **Figure 8** illustrates average Site temperature, CVOC recovery rate, and CVOC mass removed over time.

The vapor piezometers were monitored typically once a week and the readings are provided in **Table 4**.

**Table 4. Site VP Readings (inches water column)**

Date/Time	VP-B4	VP-C2	VP-D4	VP-G4	VP-K5	VP-L4	VP-L7	VP-M6
10/14/16	1.0	1.0	3.0	8.0	8.5	3.0	3.0	4.0
10/18/16	1.5	1.5	4.0	8.8	8.0	3.0	3.3	3.5
10/24/16	1.5	1.5	3.5	5.5	6.5	2.5	3.0	3.0
11/2/16	1.5	1.5	4.0	5.0	6.5	2.5	3.0	3.5
11/10/16	1.0	1.0	4.5	5.0	7.0	2.5	2.5	3.5
11/15/16	1.0	1.0	4.0	4.5	7.0	3.0	2.5	3.0
11/21/16	1.5	1.5	3.5	5.0	6.5	3.0	3.0	3.0
11/29/16	1.0	1.0	3.0	4.5	6.0	2.5	2.5	3.0
12/5/16	1.5	1.5	4.0	5.0	6.0	3.0	3.0	3.0
12/14/16	1.0	1.0	3.5	4.5	5.5	2.5	2.5	2.5
12/21/16	1.0	1.0	4.0	4.5	5.5	3.0	2.5	3.0
1/4/17	1.0	1.0	3.5	4.0	5.0	3.0	2.5	2.5
1/9/17	1.0	1.0	3.5	4.0	4.5	3.0	2.5	2.5
1/18/17	1.0	1.0	3.0	4.0	4.5	3.5	3.0	3.0
1/23/17	1.0	1.0	3.5	4.0	4.5	3.0	2.5	3.0
1/31/17	1.0	1.0	3.2	3.9	4.5	3.1	2.9	3.0
2/6/17	1.0	1.0	3.5	4.0	4.0	3.0	3.0	3.0
2/16/17	1.0	1.0	3.0	3.5	4.0	3.5	3.0	3.0

Vapor samples were collected from the influent and effluent of the VGAC system whenever TRS was onsite. Analysis was performed using a MiniRae 3000 PID. In accordance with the Work Plan, vapor samples were also collected once per week during the first four weeks of operations and then bi-monthly thereafter. The vapor samples were sent off-site for analysis by Method TO-15, including a listing of tentatively identified compounds, in an attempt to quantify the heavier compounds recovered by the vapor recovery system. The available results of the PID and TO-15 analysis can be found in **Table 6**, **Table 7**, and **Table 8** attached.

#### 8.5 Groundwater Depth Piezometers

Four sets of groundwater depth piezometers were installed around the treatment area with each set containing a piezometer located inside the treatment area and one located outside the treatment area. The piezometers were

located on the north, west, south, and east sides of the Site to demonstrate hydraulic control in an inward direction to the treatment volume. Data from the piezometers was transferred to the Site computer for storage of data. Early in the project TRS experienced difficulty with the functionality of the piezometers resulting in errant readings, most notable at GWP G5. TRS spent some time collecting manual readings during this time to confirm that hydraulic control was being maintained. It took some additional programming work with support from the manufacturer (In-Situ) to permit the GWPs to stabilize and generate more reliable readings. TRS was able to rectify the problem within the first few weeks of system operations. TRS collected groundwater elevation measurement readings daily through automated data collection. The groundwater elevation readings are presented graphically in **Figures 9a through 9d**.

## **8.6 Process Water Management**

The ERH system generated 214,685 gallons of condensate water and entrained liquid during operations at an average rate of 1.3 gallons per minute (gpm). The condensate water was reused by the system as cooling water for the condenser heat exchanger and evaporated to the atmosphere, reintroduced to the subsurface as electrode drip water, and/or discharged to the Site Groundwater Extraction Treatment System (GETS). Two 200-pound carbon vessels filled with liquid-phase granular activated carbon (LGAC) were used to treat the condensate before it was utilized by either the system or sent to the GETS. Automated condensate pumping functions were monitored, controlled, and recorded by the PCU computer and monitored on-site and remotely by project staff. The water recovered and treated with LGAC prior to being sent to the GETS was analyzed for VOCs by an off-site laboratory. The results of these analyses are provided in **Table 9**.

As the treatment volume began to increase in temperature, an increase in issues with runtime was observed in the on-site GETS due to the clogging of filters within the system. The thought was that the increase in temperature resulted in an increase in bio-solids that were most likely anaerobic sulfur-reducing bacteria. To combat the increase in bio-solid, TRS installed bag filters in-line at the system condenser in an effort to strip as many of the solids from the discharge stream as possible. In addition, a biocide was introduced at the GETS. Despite these efforts, the GETS system still struggled to operate for more than a period of a few days before it would shut down and ultimately shut down the ERH system.

Since TRS could only operate the ERH system for a short time after the shutdown of the GETS, it was decided to increase the water storage capacity at the system condenser. In order to do this, TRS rented and installed a 6,000-gallon storage tank from ETS. The additional capacity allowed for TRS to operate the ERH system for a period of a few days without the use of the GETS system. If the GETS system were to shut down water would be discharge to the tank for storage until the GETS was once again able to receive discharge water. This modification resulted in an improved run time of the ERH system.

## **8.7 System Waste**

Throughout all phases of system construction and system operations, TRS generated waste in need of disposal. During electrode installation and trenching activities in the street, a total of 141.4 tons of soil were generated that were analyzed, profiled, and disposed of at the Winnebago Landfill. During system operations, of the 214,685 gallons of condensate water and entrained liquid generated, 112,279 gallons were discharged to the GETS. Throughout system operations the vapor-phase carbon was monitored for breakthrough and air permit compliance. TRS required that one VGAC change out occur during the operations portion of the project resulting in a total of 24,000 pounds of spent carbon being removed from the Site at project's end. Throughout system operations, the liquid-phase carbon was also monitored for breakthrough. No LGAC change outs were required throughout system operations resulting in just 400 pounds of spent carbon being removed from the Site at project's end. Following system demobilization, TRS was required to collect a sample, profile, and dispose of approximately 3,000 gallons of water that was a combination of system process water and mild detergent used to clean the condenser. All paperwork associated with the disposal of these project-derived wastes is included as **Appendix A**.

As was mentioned in TRS's Work Plan, TRS was going to make efforts to streamline the construction to achieve an installation that was conducted in a green and sustainable fashion. TRS adhered to this mission throughout the project by making every effort to recycle items that could be sent off-site to recycling facilities instead of the landfill. TRS recycled cardboard and plastic water bottles throughout the project. At project's end, any material that could be reused on future projects such as electrode cable was organized and shipped off-

site. Other items that could be recycled such as the electrode heads themselves were responsibly disposed of at a local scrap yard.

## 8.8 Site Voltage Monitoring

Voltage potentials above the TRS administrative control limit of 10 volts (Occupational Safety and Health Administration (OSHA) limit is 50 volts) were not observed during any weekly step-and-touch and step-and-step voltage surveys conducted throughout operations within the ERH restricted zone. In addition, voltage potentials above the TRS administrative control limit of 5 volts within public areas (outside the fence) were also not observed during these weekly surveys.

## 9.0 ERH REMEDIATION RESULTS

### 9.1 Soil Results

Fifty-two (52) soil samples were collected from various depths at 18 separate locations over the course of three separate sampling events that occurred on Tuesday, December 13, 2016, Monday, January 16, 2017, and Thursday, February 16, 2017. The first soil sampling event that occurred on Tuesday, December 13, 2016, was conducted to assess system progress to date and found that the majority of the sample locations had met or exceeded the cleanup objective. Following the second soil sampling event, there remained only three locations at specific depths requiring additional treatment. These locations were SS1-37, SS6-32, and SS9-32. Due to the high flow of groundwater at depth that resulted in a difficulty to heat, TRS proposed installing air injection points in these areas to work in conjunction with ERH in volatilizing the remaining contaminants. These wells were installed on Tuesday, January 17, 2017, following the completion of the second soil sampling event and were put into operation on Tuesday January 24, 2017.

Following the conclusion of the third sampling event, the results of all soil sampling events were reviewed by TRS, CDM, and the IEPA and it was concluded that all of the remediation objectives had been met. The confirmatory soil borings and final concentrations are provided on **Figure 11**. Following ERH, the soil sampling event indicated that remediation goals were significantly exceeded with nearly every location reporting levels of the COCs below the laboratory minimum detection limits. The maximum pre-ERH concentrations and post-ERH average concentrations for each COC are summarized in **Table 5**. Since nearly all of the post-ERH concentrations fell below the laboratory detection limits the average concentration calculation resulted in a value of the detection limit for each COC. It should be noted that no detections of 1,1,1 TCA were observed during any of the post treatment soil sampling, indicating TCA was completely removed via vaporization initially, then hydrolysis.

The pre- and post-ERH concentrations are illustrated graphically on **Figure 10**.

**Table 5. Maximum Pre-ERH COC Concentrations and Post-ERH Average Concentrations (Laboratory Detection Limits) (µg/kg)**

	Carbon Tet.	1,1-DCE	1,1,1-TCA	1,1,2-TCA	TCE	PCE
Max Concentration	8,400	23,000	510,000	230	360	220
Lab Detection Limit	18	19	18	16	7.6	17

## 10.0 DEMOBILIZATION

TRS was granted permission to commence with system decommissioning on February 22, 2017. TRS immediately began with the initial tasks of shutting down equipment in anticipation of ERH equipment removal. During the week of February 27, 2017, TRS staff mobilized to the Site and focused on preparing all of



the ERH equipment for removal by cleaning and packing up each individual piece. On Tuesday, February 28, 2017, the VGAC vessel was picked up by Evoqua Water Technologies and removed from the Site. On Tuesday, March 7, 2017, Creative Crane mobilized back to the Site to load out most of the ERH equipment. The PCU, Condenser, Cooling Tower, and Vacuum Blower were all loaded onto trucks and removed from the Site.

During the week of March 13, 2017, TRS focused primarily on electrode abandonment. TRS utilized a mini-excavator to excavate a hole next to each electrode, inside and outside of the building, that was completed above grade. On Wednesday, March 15, 2017, Jackson's Welding, Inc. mobilized to the Site and utilized a torch to cut off all electrode heads to two ft bgs.

During the week of March 20, 2017, TRS focused primarily on packing up remaining equipment, Site restoration, and the completion of the electrode abandonment. On Wednesday, March 22, 2017, TRS contracted PJs Concrete Pumping to fill all electrodes on-site with concrete up to grade. In addition, the electrodes in the street and all associated conveyance piping were filled with concrete. On Thursday, March 23, 2017, the remaining TRS materials on-site were loaded onto trucks and removed from the Site. TRS also had their fence subcontractor, Dach Fence Co., return to the Site and remove the chain link fence from around the treatment area.

On April 6, 2017, TRS made a trip to the Site to conduct the demobe Site walk meeting with CDM and the IEPA. Following the meeting, it was determined that the Site had been satisfactorily restored and no further work was required on-site.

On Wednesday, April 26, 2017, Evergreen Tank Solutions mobilized to the Site and removed the 6,000-gallon storage tank that was utilized by TRS during system operations. TRS returned to the Site one last time on April 28, 2017, to facilitate the removal of the two 55-gallon drums of spent liquid-phase carbon.

## 11.0 CONCLUSIONS

Based upon the data collected before, during, and after the ERH project, the following conclusions can be reached concerning this remediation effort.

1. The goal to decrease concentrations of all Site CVOCs below the remedial goals was met and exceeded.
2. Based upon PID analysis of soil vapors recovered during ERH operations, approximately 5,700 pounds of petroleum hydrocarbons and CVOCs were removed from the treatment volume during the remediation.
3. Based on the recovered mass of 1,1-DCE, TRS estimates that nearly 150 pounds of 1,1,1 TCA was degraded *in situ*.
4. The ERH system operated for a total of 125 days and applied a total of 1,356,100 kWh of energy to the total treatment volume.
5. The ERH system was able to heat the soils within the treatment volume to design temperatures to remediate TCA, PCE, and other Site COCs.
6. The highest individual temperature measurement from within the ERH treatment volume was 101.9°C, recorded at TMP F4 at a depth of 27 ft bgs on December 10, 2016.
7. Throughout the project, Site and public safety were maintained at all times.

## **ATTACHMENTS**



**Table 6** Vapor Influent and Effluent PID Monitoring Results

Date	Blower Flow Rate (scfm)	Influent Conc (ppm)	Effluent Conc (ppm)	VOC Recovery Rate (lb/day)	Total VOC Recovery (lb)	VOC Discharge Rate (lb/day)	Total HAPS Discharged (lb)	Total VOC Discharged (lb)	LAB Total VOC Recovery Rate (lb/day)
10/17/16	830	25.6	0.0	10.4	0.0	0.0	0.0	0.0	
10/18/16	830	53.4	0.0	21.7	15.0	0.0	0.0	0.0	8.1
10/19/16	830	37.0	0.0	15.0	29.7	0.0	0.0	0.0	
10/24/16	834	50.2	0.0	20.5	119	0.0	0.0	0.0	
10/25/16	837	55.2	0.0	22.6	145	0.0	0.0	0.0	46.5
10/26/16	839	67.9	0.0	27.8	168	0.0	0.0	0.0	
10/27/16	850	81.0	0.0	33.6	193	0.0	0.0	0.0	
10/28/16	861	96.0	1.0	40.4	233	0.4	0.0	0.2	
10/31/16	860	110.0	3.0	46.2	365	1.3	0.2	2.8	
11/1/16	845	83.0	8.0	34.3	399	3.3	0.3	4.7	56.0
11/2/16	859	105.0	7.0	44.1	440	2.9	0.6	7.9	
11/3/16	860	160.0	15.0	67.2	497	6.3	0.9	12.8	
11/7/16	860	143.3	52.3	60.2	752	22.0	4.9	69.3	61.9
11/10/16	869	142.7	45.1	60.6	946	19.1	9.5	135	
11/14/16	860	70.0	53.0	29.4	1,122	22.3	15.1	216	
11/16/16	878	172.0	92.0	73.8	1,215	39.5	19.0	272	
11/18/16	824	127.0	82.0	51.1	1,341	33.0	24.1	345	
11/23/16	800	200.0	0.0	78.2	1,684	0.0	30.3	433	240.4
11/29/16	802	212.0	156.0	83.1	2,138	61.1	42.3	604	
12/1/16	719	138.0	122.0	48.3	2,291	42.8	50.1	726	
12/5/16	708	102.7	136.5	35.5	2,452	47.2	62.9	899	
12/6/16	711	126.1	123.0	43.8	2,498	42.7	66.6	951	50.9

Date	Blower Flow Rate (scfm)	Influent Conc (ppm)	Effluent Conc (ppm)	VOC Recovery Rate (lb/day)	Total VOC Recovery (lb)	VOC Discharge Rate (lb/day)	Total HAPS Discharged (lb)	Total VOC Discharged (lb)	LAB Total VOC Recovery Rate (lb/day)
12/16/16	770	206.0	202.0	77.5	3,064	76.0	105.3	1,505	
12/21/16	776	104	101	39.4	3,393	38.3	105.3	1,505	8.1
12/23/16	886	120	117	51.9	3,473	50.6	105.3	1,505	
1/3/17	871	111.0	132.0	47.2	4,032	56.2	175.4	2,506	17.8
1/9/17	879	124.9	100.0	53.7	4,331	43.0	196.0	2,800	
1/10/17	271	135.0	110.0	17.9	4,368	14.6	198.1	2,830	
1/11/17	762	71.6	65.0	26.7	4,388	24.2	199.3	2,847	
1/17/17	857	40.1	50.0	16.8	4,520	20.9	212.6	2,984	
1/23/17	848	173.4	100.0	71.8	4,784	41.4	227.4	3,249	
1/25/17	853	300.0	250.0	124.9	4,966	104.1	236.9	3,384	76.6
1/26/17	859	268.7	180.0	112.7	5,108	75.5	244.3	3,490	
1/31/17	830	66	86	26.8	5,455	34.9	263.6	3,765	
2/6/17	782	100.9	80	38.6	5,650	30.6	277.3	3,961	
2/7/17	756	68.8	58.1	25.4	5,684	21.5	279.2	3,989	32.8
2/8/17	782	91.5	55.3	35.0	5,709	21.1	280.4	4,006	

**Table 7. TO-15 Influent to VGAC**

<b>Date</b>	<b>1,1,1 TCA (µg/m3)</b>	<b>1,1 DCE (µg/m3)</b>	<b>1,1 DCA (µg/m3)</b>	<b>Other TO-15 (µg/m3)</b>	<b>Other as Decane (µg/m3)</b>	<b>Total VOCs (µg/m3)</b>	<b>Total VOC Recovery Rate (lbs/day)</b>
10/18/16	100,000	280	3,400	5,450	NS	109,130	8
10/25/16	50,000	7,200	1,700	6,900	469,690	620,095	47
11/1/16	53,000	29,000	430	23,670	633,670	739,770	56
11/7/16	13,000	16,000	2,800	21,625	749,022	802,447	62
11/23/16	1,800	1,800	590	121,860	5,330,521	5,456,571	391
12/6/16	540	2,000	210	20,610	774,873	798,233	51
12/22/16	200	150	18	9,396	106,610	116,374	8
1/3/17	230	170	33	6,474	220,836	227,743	18
1/25/17	130	600	39	34,647	967,051	1,002,467	77
2/7/17	130	43	23	9,685	473,236	483,282	33



**Table 8. TO-15 Effluent from VGAC**

<b>Date</b>	<b>1,1,1 TCA Conc. (µg/m3)</b>	<b>1,1 DCE Conc. (µg/m3)</b>	<b>1,1 DCA Conc. (µg/m3)</b>	<b>Other TO- 15 (µg/m3)</b>	<b>Other as Decane (µg/m3)</b>	<b>Total VOCs (µg/m3)</b>	<b>Total HAPS Discharge Rate (lb/day)</b>	<b>Total VOC Discharge Rate (lb/day)</b>
10/18/16	47	ND	ND	410	NS	457	0.03	0
10/25/16	5,200	110	430	17	NS	5,757	0.43	0
11/1/16	72,000	8,300	ND	ND	NS	80,300	6.08	6
11/7/16	100,000	15,000	5,800	1,370	NS	122,170	9.42	9
11/23/16	79	48	15	233	20,532	20,907	0.03	2
12/6/16	1,200	3,200	120	6,600	860,440	871,561	0.71	56
12/22/16	300	230	34	11,476	233,921	245,961	0.84	17
1/3/17	250	220	36	5,812	389,064	395,382	0.49	31
1/25/17	130	910	48	8,957	473,236	483,282	0.77	37

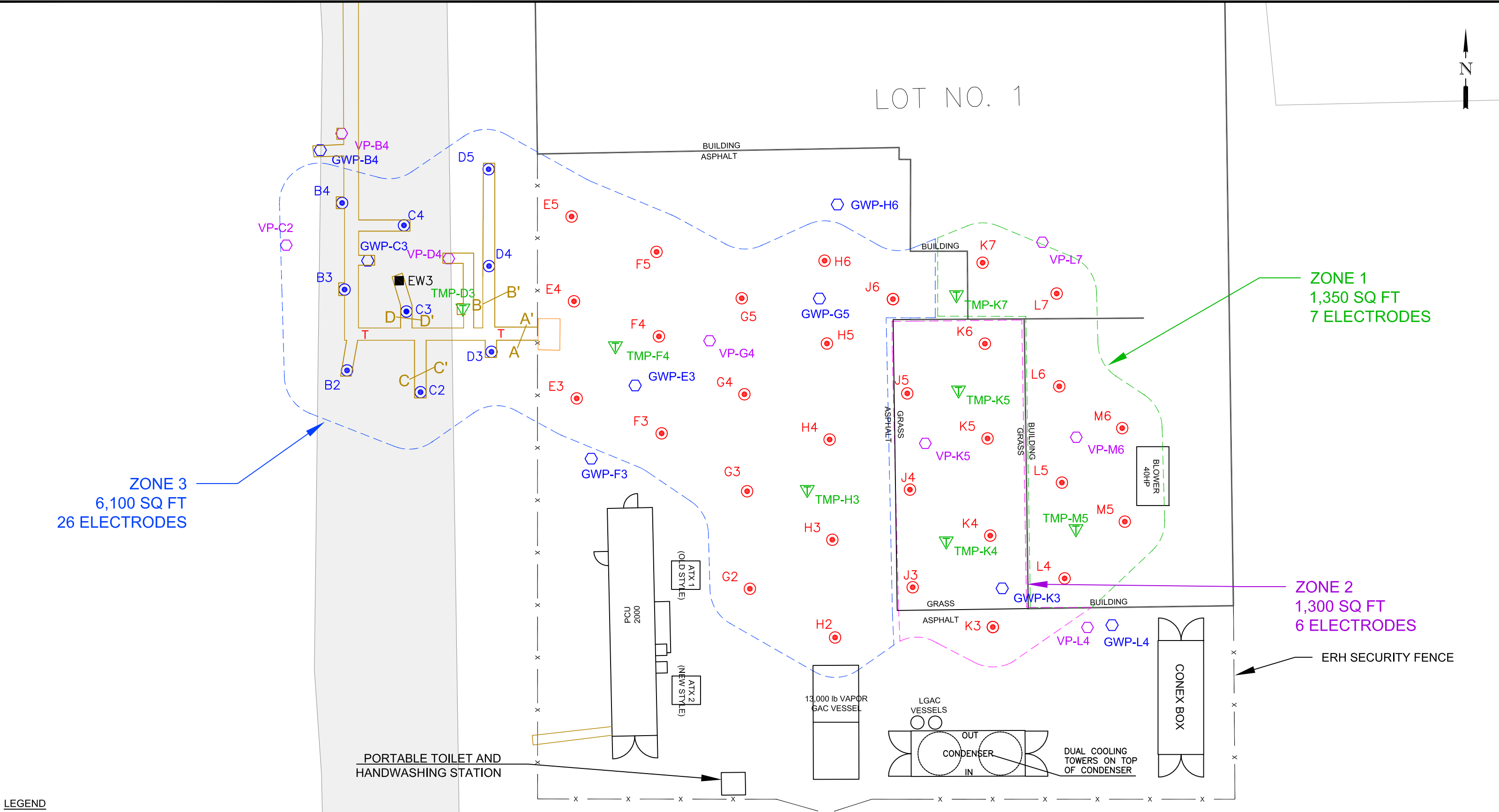
**Table 9.** LGAC and GETS Discharge Data

	10/18/16	10/25/16	11/1/16	11/7/16	11/23/16	12/6/16	12/22/16	1/3/17	1/25/17	2/7/17
Temperature (F)	75	80	85	84	85	57	--	50	78	53
pH	8.1	8.0	8.6	9	8.1	9.0	--	8.2	8.0	8.2
Pre LGAC Carbon Tetrachloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pre LGAC DCE	ND	8.4	17	15.0	ND	ND	ND	ND	ND	ND
Pre LGAC 1,1,1 - TCA	47	110	69	24	2.6	ND	ND	ND	ND	ND
Pre LGAC 1,1,2 - TCA	0	1.5	2	2	ND	ND	ND	ND	ND	ND
Pre LGAC TCE	ND	1.1	1	0,72	ND	ND	ND	ND	ND	ND
Pre LGAC PCE	ND	ND	ND	1	ND	ND	ND	ND	ND	ND
Pre LGAC Total Contaminants Concentration	248	457	300	1,014	4,446	1,718	6,282	2,614.1	2,241.0	2,299.0
Mid LGAC Carbon Tetrachloride	ND	ND	ND	LGAC off	ND	ND	ND	ND	ND	ND
Mid LGAC DCE	ND	ND	ND		ND	ND	ND	ND	ND	ND
Mid LGAC 1,1,1 - TCA	ND	ND	ND		2.5	1.2	ND	ND	ND	ND
Mid LGAC 1,1,2 - TCA	ND	ND	ND		ND	ND	ND	ND	ND	ND
Mid LGAC TCE	ND	ND	ND		ND	ND	ND	3.4	ND	ND
Mid LGAC PCE	ND	ND	ND		ND	ND	ND	ND	ND	ND
Mid LGAC Total Contaminants Concentration	191	193	0		1,503	932	5,368	2,621.4	2,201.0	2,331.0
Post LGAC Carbon Tetrachloride	ND	ND	ND	LGAC off	ND	ND	ND	ND	ND	ND
Post LGAC DCE	ND	ND	ND		ND	ND	ND	ND	ND	ND
Post LGAC 1,1,1 - TCA	ND	ND	ND		ND	ND	ND	ND	ND	ND
Post LGAC 1,1,2 - TCA	ND	ND	ND		ND	ND	ND	ND	ND	ND
Post LGAC TCE	ND	ND	ND		ND	ND	ND	8.6	ND	ND
Post LGAC PCE	ND	ND	ND		ND	ND	ND	ND	ND	ND
Post LGAC Total Contaminants Concentration	249.0	214.9	24		228	485	3,683	1,974.5	1,624.4	2,179.0

**Table 10. PID Data**

<b>Date</b>	<b>Influent (ppm)</b>	<b>Effluent (ppm)</b>	<b>Date</b>	<b>Influent (ppm)</b>	<b>Effluent (ppm)</b>	<b>Date</b>	<b>Influent (ppm)</b>	<b>Effluent (ppm)</b>
10/17/16 16:45	26	0	11/16/16 9:00	172	92	1/23/17 12:30	173	100
10/18/16 15:15	53	0	11/18/16 9:30	127	82	1/25/17 9:00	300	250
10/19/16 10:30	37	0	11/23/16 17:00	200	0	1/26/17 13:30	269	180
10/24/16 11:30	50	0	11/29/16 8:00	212	156	1/31/17 13:00	66	86
10/25/16 16:30	55	0	12/1/16 16:00	138	122	2/6/17 12:30	101	80
10/26/16 14:00	68	0	12/5/16 12:15	103	137	2/7/17 14:15	69	58
10/27/16 10:00	81	0	12/6/16 16:10	126	123	2/8/17 9:30	92	55
10/28/16 11:45	96	1	12/16/16 0:00	206	202			
10/31/16 13:00	110	3	12/21/16 15:15	104	101			
11/1/16 9:00	83	8	12/23/16 9:15	120	117			
11/2/16 10:00	105	7	1/3/17 15:20	111	132			
11/3/16 11:00	160	15	1/9/17 13:45	125	100			
11/7/16 11:00	143	52	1/10/17 15:00	135	110			
11/10/16 16:00	143	45	1/11/17 11:30	72	87			
11/14/16 14:00	70	53	1/17/17 13:20	40	70			





**LEGEND**

- ELECTRODE (QTY 30)
- BELOW GRADE ELECTRODE (QTY 9)
- TEMPERATURE MONITORING POINT (QTY 7)
- VAPOR PIEZOMETER (QTY 8)
- EXISTING EXTRACTION WELL TO BE COOLED
- TEMPERATURE SENSING DEVICE FOR TRENCH MONITORING
- GROUNDWATER PIEZOMETER (QTY 8)
- TRENCH CROSS SECTION LOCATION

0 8 16 32  
SCALE IN FEET

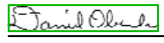
LICENSED PROFESSIONAL ENGINEER  
DANIEL W. OBERLE  
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OF ILLINOIS  
06/15/16  
ENGINEER SIGNATURE / DATE



**TRS**  
Accelerating Value

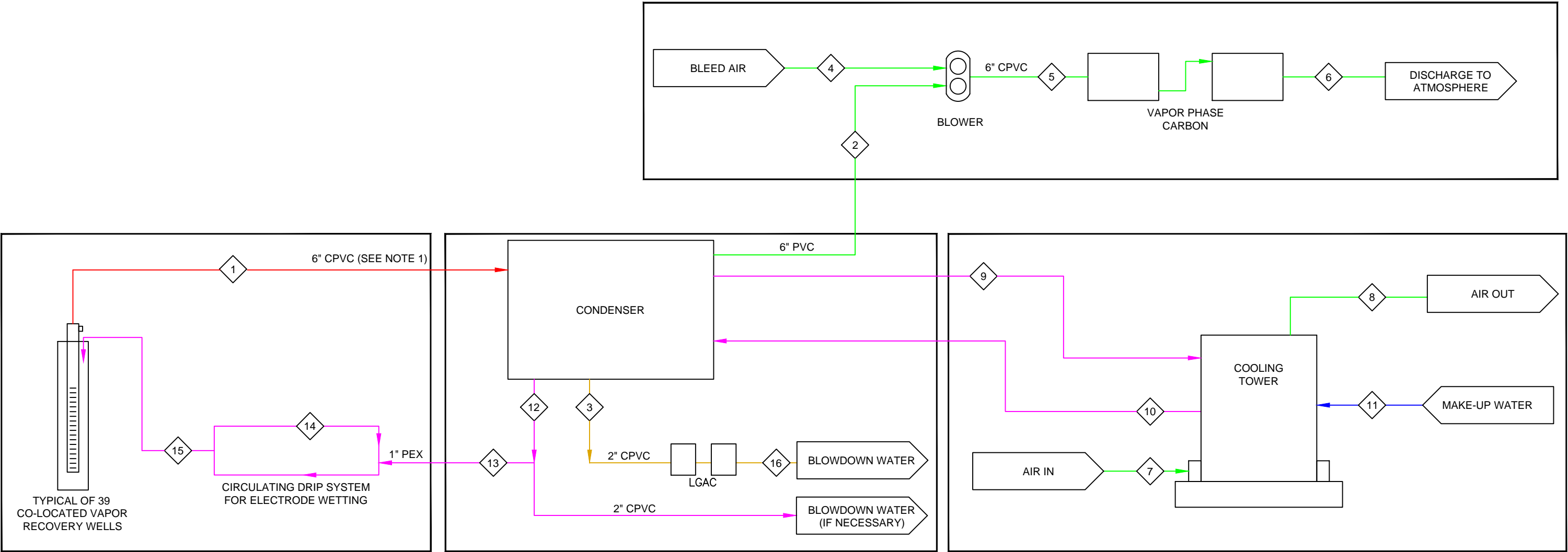
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DESIGNED BY C. LANSING	SITE LOCATION SOUTHEAST ROCKFORD AREA 4 ROCKFORD, ILLINOIS		
DRAWN BY A. WAGNER	CLIENT IL, EPA		
CHECKED BY D. OBERLE	FIGURE 1		
PROJECT MANAGER B. MORRIS			
QSAT REVIEW 06/06/16	APPROVED FOR CONSTRUCTION BY  DATE 06/15/16	DATE 05/20/2016	PROJECT RFD75
		SHEET	

APPROVED

For Construction

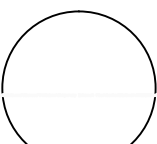



P&ID LINE COLORS

- POTABLE/CLEAN WATER
- PROCESS WATER
- AIR
- STEAM
- AIR/STEAM MIX
- SOLVENT/CHEMICALS
- BLOWDOWN

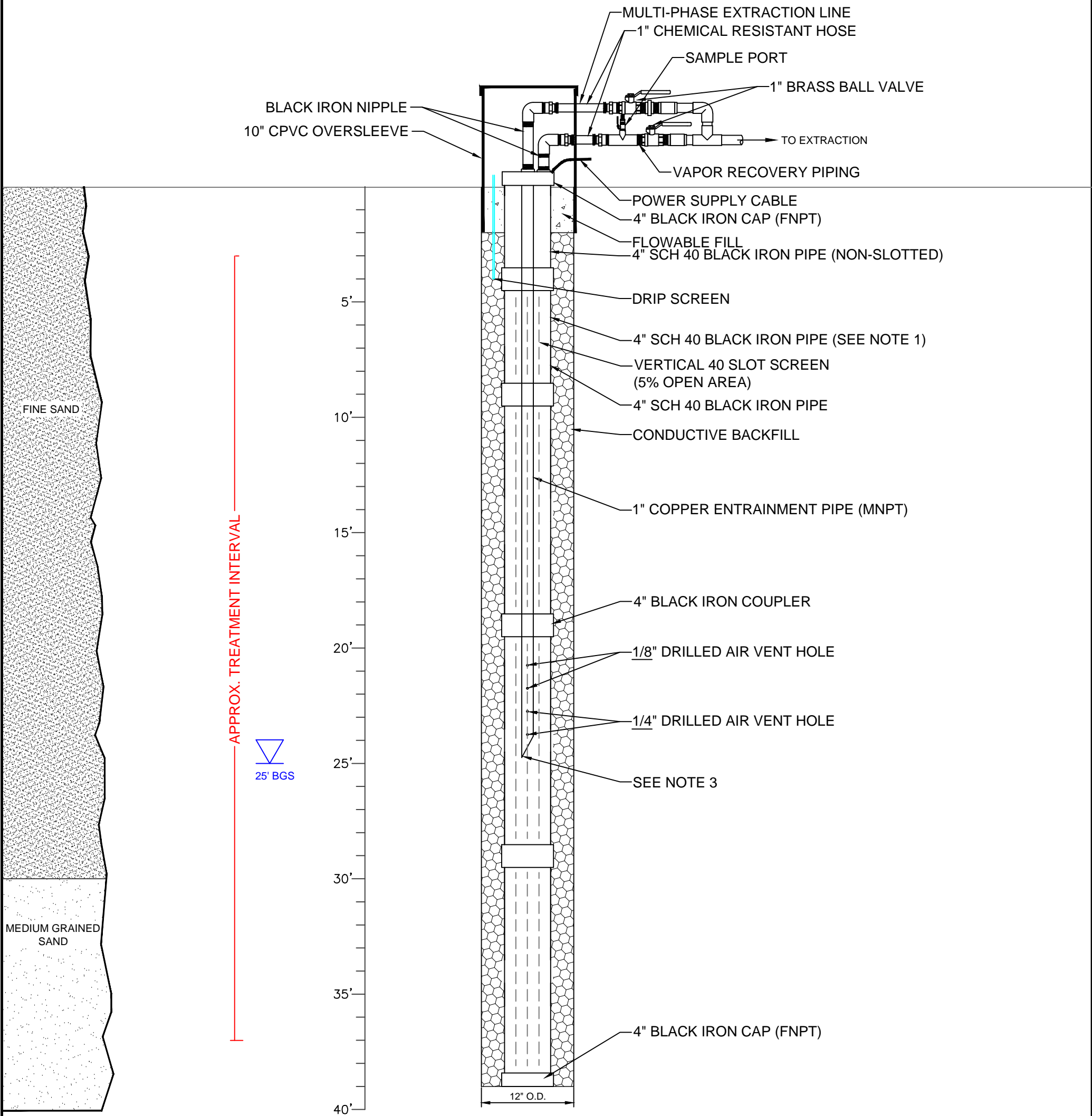
NOTES

1. SIZE OF VAPOR RECOVERY PIPING CHANGES ACROSS SITE. SEE PAGE Y-5 FOR SPECIFIC PIPE SIZES.
- 2.
- 3.
- 4.

<div></div> <div>06/15/16 ENGINEER SIGNATURE / DATE</div>	<div><div>TRSGROUP, INC. 338 COMMERCE AVE., SUITE 304, LONGVIEW, WA 98632</div><div>CONFIDENTIAL: INFORMATION CONTAINED IN THIS DOCUMENT IS CONFIDENTIAL AND THE PROPERTY OF TRS GROUP, INC. NO INFORMATION CONTAINED HEREIN MAY BE DUPLICATED, USED OR DISTRIBUTED WITHOUT THE EXPRESSED WRITTEN PERMISSION OF TRS GROUP, INC. LONGVIEW, WA.</div></div>	DESIGNED BY C. LANSING	SITE LOCATION CLIENT		
		DRAWN BY C. LANSING	PROCESS FLOW DIAGRAM		
		CHECKED BY D. OBERLE			
		PROJECT MANAGER B. MORRIS			
		QSAT REVIEW 06/06/16	APPROVED FOR CONSTRUCTION BY _____ DATE 06/15/16	DATE 03/31/17	PROJECT RFD75
		SHEET FIGURE 2			

ELECTRODE DETAIL - ZONE 1

TYPICAL OF 7



NOTES

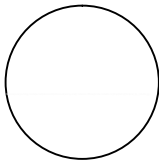
- 1. 10.5 FT PIPE SECTIONS WILL BE USED FOR INTERIOR ELECTRODES
- 2. DRAWING TYPICAL FOR ELECTRODES: M5, M6, L4, L5, L6, L7, K7
- 3. DEPTH TO GROUNDWATER MUST BE CONFIRMED BEFORE ENTRAINMENT PIPE IS CUT. ENTRAINMENT PIPE SHOULD SIT 6 INCHES BELOW WATER TABLE

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A. WAGNER

CHECKED BY  
D. OBERLE

PROJECT MANAGER  
B. MORRIS

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06/06/16

SITE LOCATION  
SOUTHEAST ROCKFORD AREA 4  
ROCKFORD, ILLINOIS  
CLIENT  
IL EPA

ELECTRODE DETAIL - ZONE 1

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BY  
DATE 06/15/16

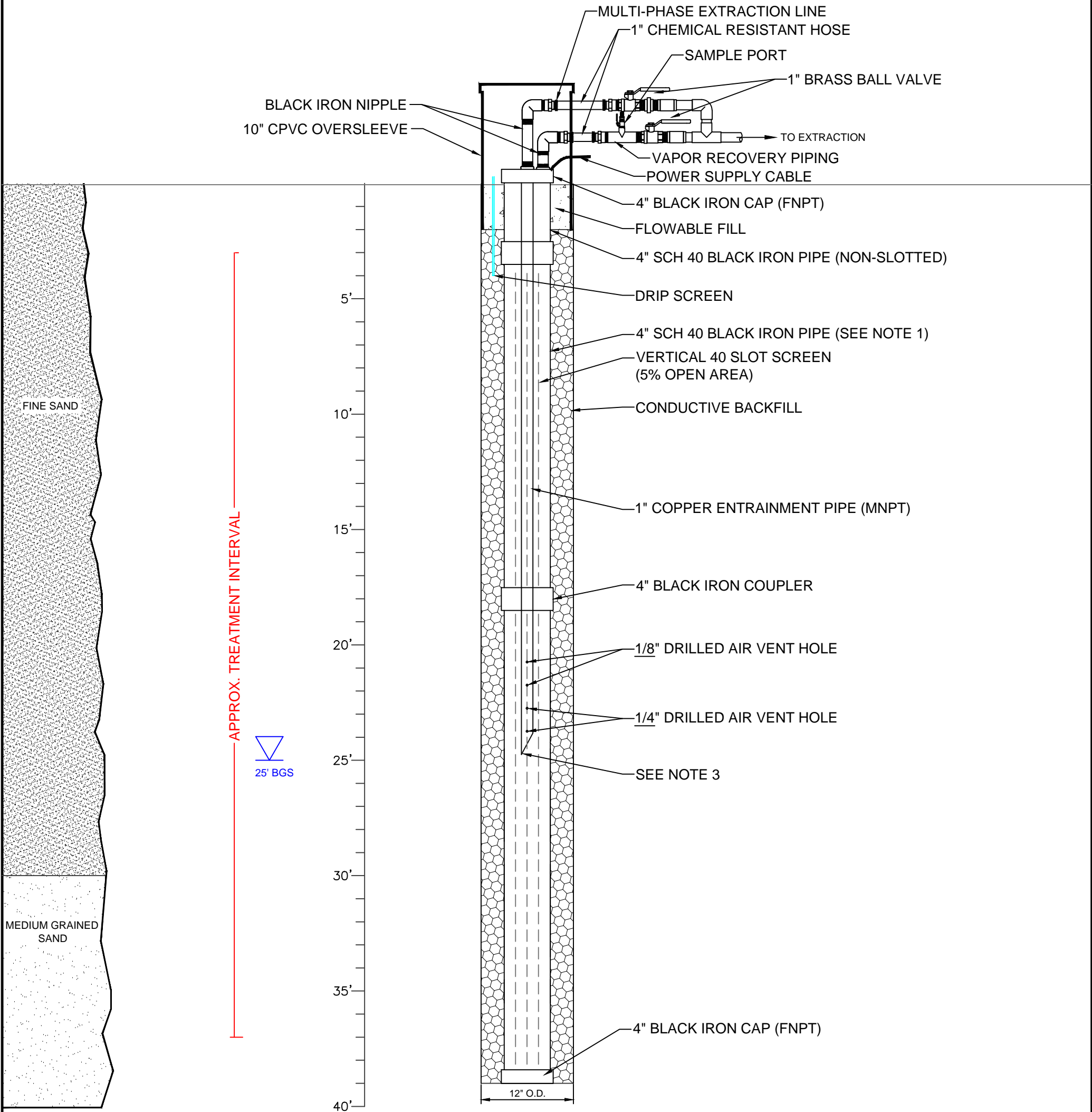
DATE 03/31/17 PROJECT RFD75

SHEET **FIGURE 3A**



ELECTRODE DETAIL - ZONE 2

TYPICAL OF 7



NOTES

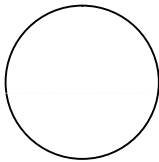
- 21 FT PIPE SECTIONS WILL BE USED FOR EXTERIOR ELECTRODES
- DRAWING TYPICAL FOR ELECTRODES: K3, K4, K5, K6, J3, J4, J5
- DEPTH TO GROUNDWATER MUST BE CONFIRMED BEFORE ENTRAINMENT PIPE IS CUT. ENTRAINMENT PIPE SHOULD SIT 6 INCHES BELOW WATER TABLE

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ELECTRODE DETAIL - ZONE 2

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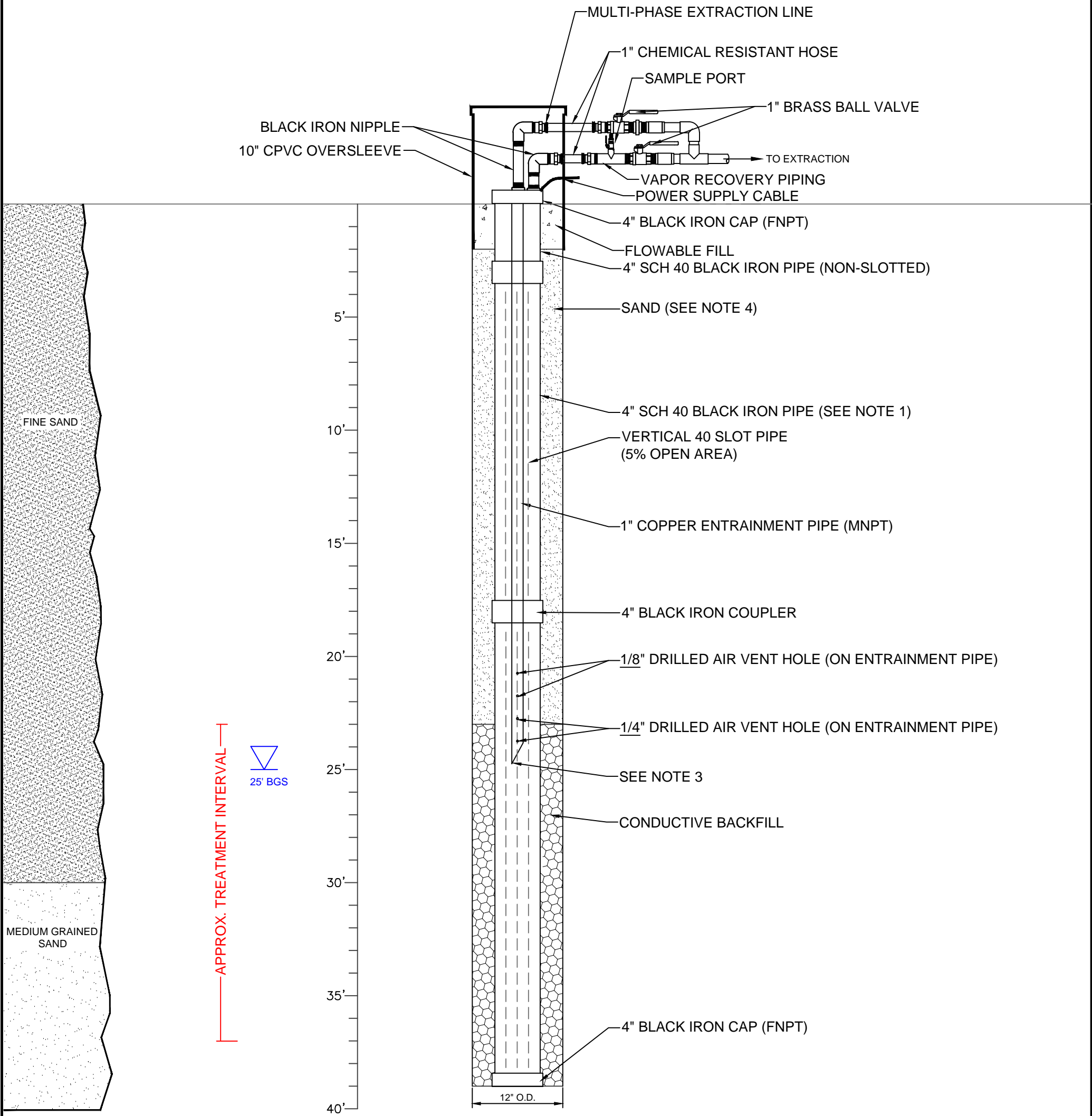
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FIGURE 3B

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ABOVE GRADE ELECTRODE DETAIL - ZONE 3  
TYPICAL OF 16



NOTES

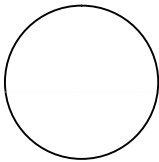
- 1. 21 FT PIPE SECTIONS WILL BE USED FOR EXTERIOR ELECTRODES
- 2. DRAWING TYPICAL FOR ELECTRODES: J6, H2, H3, H4, H5, H6, G2, G3, G4, G5, F3, F4, F5, E3, E4, E5
- 3. DEPTH TO GROUNDWATER MUST BE CONFIRMED BEFORE ENTRAINMENT PIPE IS CUT. ENTRAINMENT PIPE SHOULD SIT 6 INCHES BELOW WATER TABLE
- 4. SAND SHOULD BE GLOBAL #4 OR EQUIVALENT (6X16 SILICA SAND WITH 95% OF PARTICLES IN RANGE OF 0.045"-0.132"

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B. MORRIS

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06/06/16

SITE LOCATION  
SOUTHEAST ROCKFORD AREA 4  
ROCKFORD, ILLINOIS  
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IL EPA

ABOVE GRADE ELECTRODE DETAIL - ZONE 3

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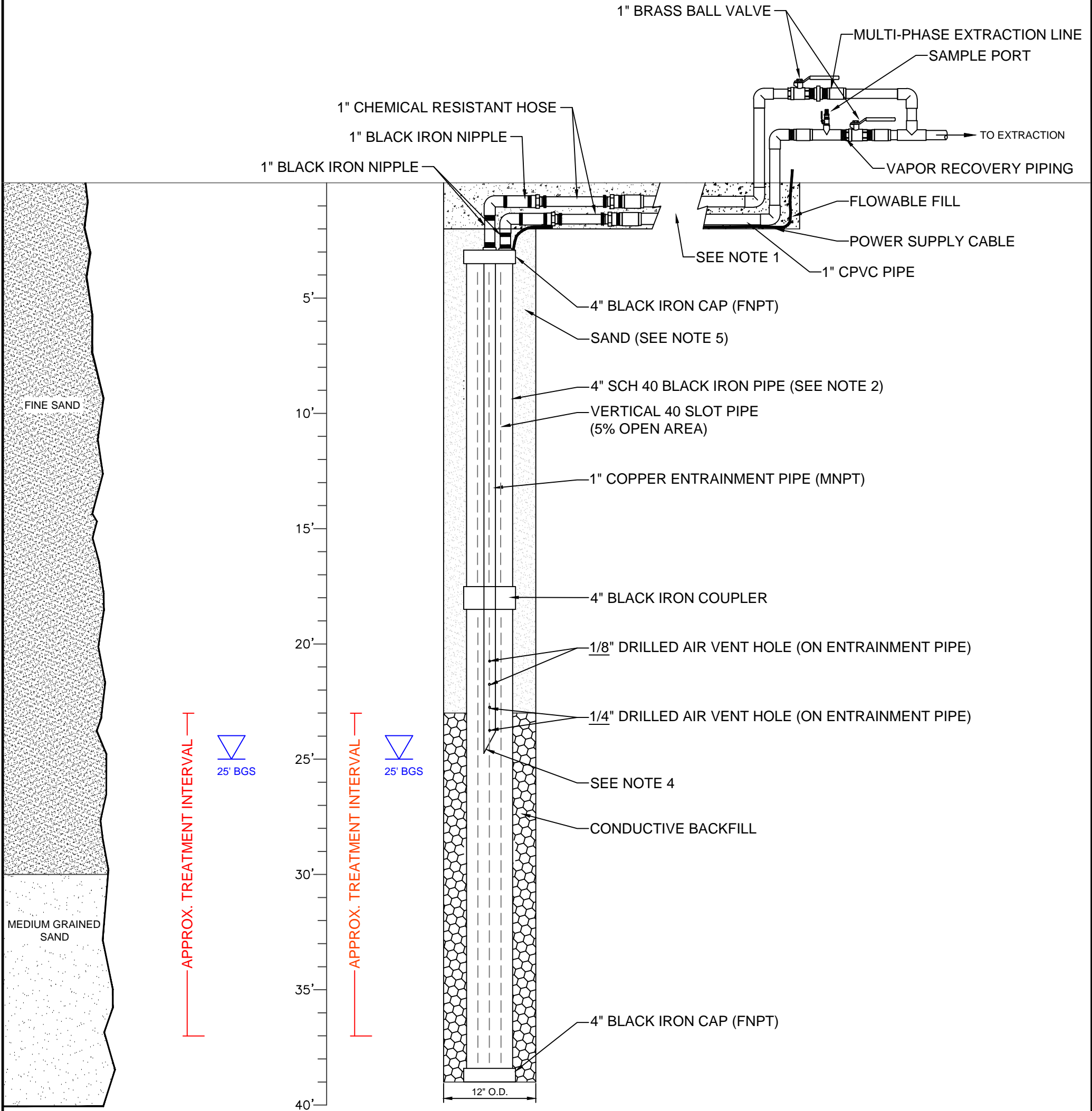
PROJECT

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FIGURE 3C

BELOW GRADE ELECTRODE DETAIL - ZONE 3  
TYPICAL OF 6



NOTES

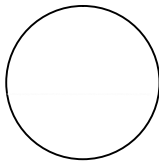
1. PIPING TO COME ABOVE GRADE AT TRENCH STICKUP AREA
2. 21 FT PIPE SECTIONS WILL BE USED FOR EXTERIOR ELECTRODES
3. DRAWING TYPICAL FOR ELECTRODES: C2, C3, C4, B2, B3, B4
4. DEPTH TO GROUNDWATER MUST BE CONFIRMED BEFORE ENTRAINMENT PIPE IS CUT. ENTRAINMENT PIPE SHOULD SIT 6 INCHES BELOW WATER TABLE
5. SAND SHOULD BE GLOBAL #4 OR EQUIVALENT (6X16 SILICA SAND WITH 95% OF PARTICLES IN RANGE OF 0.045"-0.132"

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BELOW GRADE ELECTRODE DETAIL - ZONE 3

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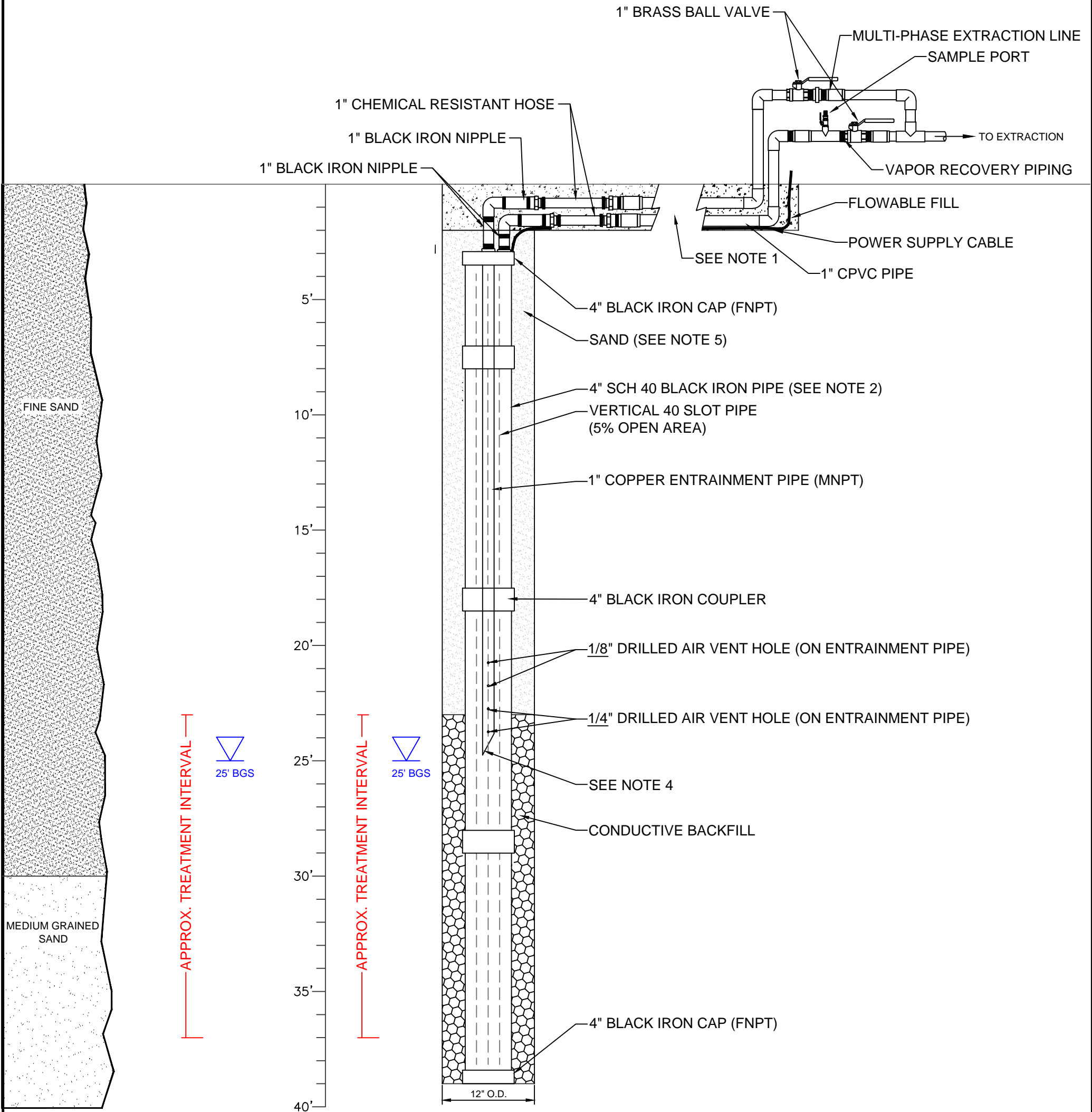
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SHEET **FIGURE 3D**



BELOW GRADE ELECTRODE DETAIL - ZONE 3  
BELOW OVERHEAD ELECTRICAL UTILITY  
TYPICAL OF 3



NOTES

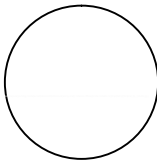
1. PIPING TO COME ABOVE GRADE AT TRENCH STICKUP AREA.
2. 10.5 FT PIPE SECTIONS WILL BE USED FOR ELECTRODES UNDER OVERHEAD ELECTRICAL UTILITY.
3. DRAWING TYPICAL FOR ELECTRODES: D3, D4, D5.
4. DEPTH TO GROUNDWATER MUST BE CONFIRMED BEFORE ENTRAINMENT PIPE IS CUT. ENTRAINMENT PIPE SHOULD SIT 6 INCHES BELOW WATER TABLE.
5. SAND SHOULD BE GLOBAL #4 OR EQUIVALENT (6X16 SILICA SAND WITH 95% OF PARTICLES IN RANGE OF 0.045"-0.132").

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BELOW GRADE ELECTRODE DETAIL - ZONE 3  
BELOW ELECTRICAL OVERHEAD UTILITY

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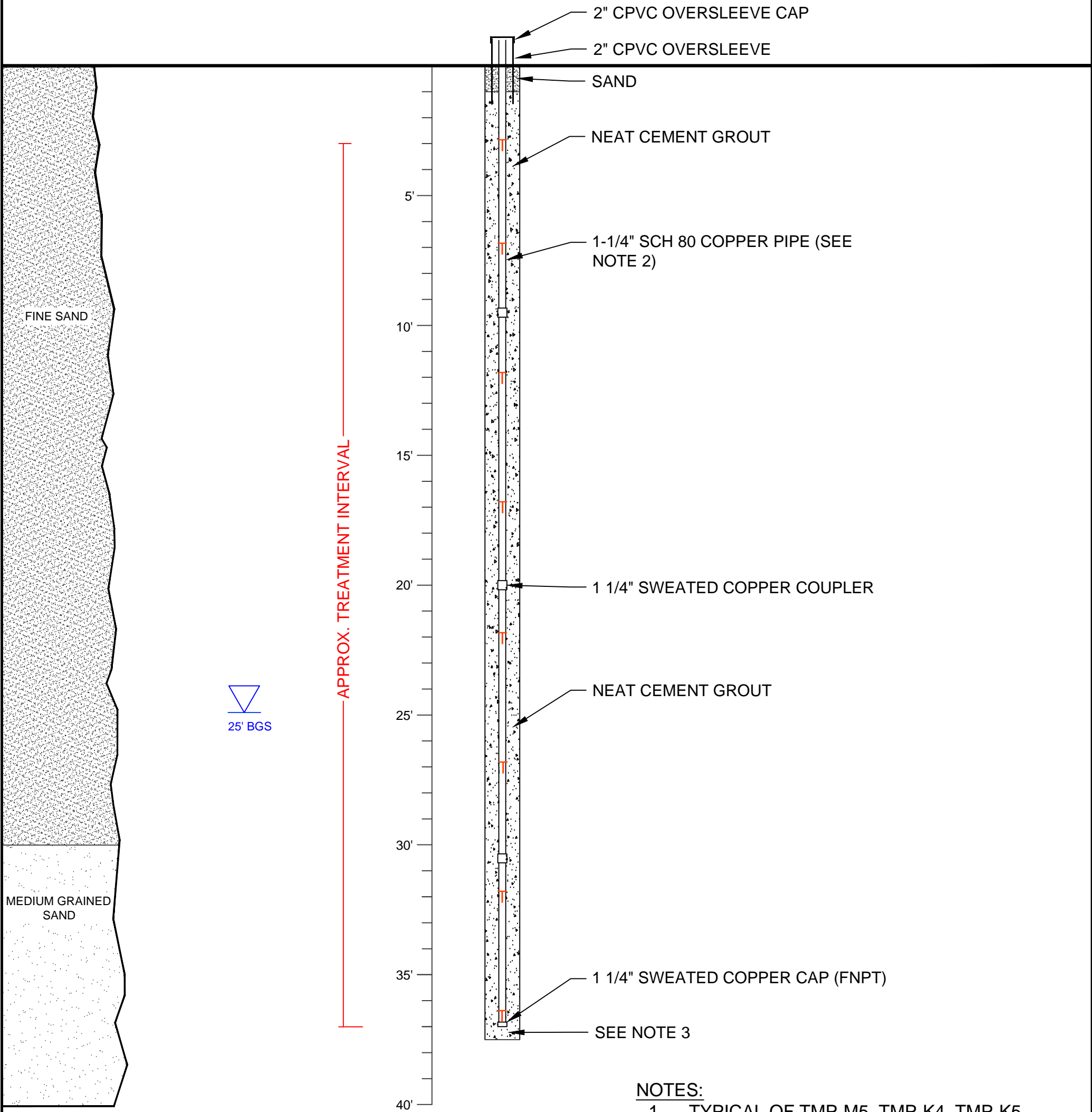
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FIGURE 3E

APPROVED  
For Construction  
AS BUILTS

TEMPERATURE MONITORING POINT  
ZONES 1 AND 2  
TYPICAL OF 4



LEGEND:  
T TEMPERATURE SENSING DEVICE

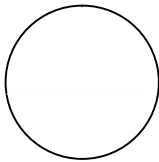
- NOTES:
1. TYPICAL OF TMP-M5, TMP-K4, TMP-K5, TMP-K7
  2. USE 10.5 FT SECTIONS OF PIPE FOR TMPs
  3. GROUT SHOULD EXTEND 6 INCHES BELOW BOTTOM BLACK IRON CAP

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LOCATION  
CLIENT

SOUTHEAST ROCKFORD AREA 4  
ROCKFORD, ILLINOIS  
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TEMPERATURE MONITORING POINT DETAIL  
ZONES 1 AND 2

APPROVED FOR CONSTRUCTION

BY

DATE 06/15/16

DATE

03/31/17

PROJECT

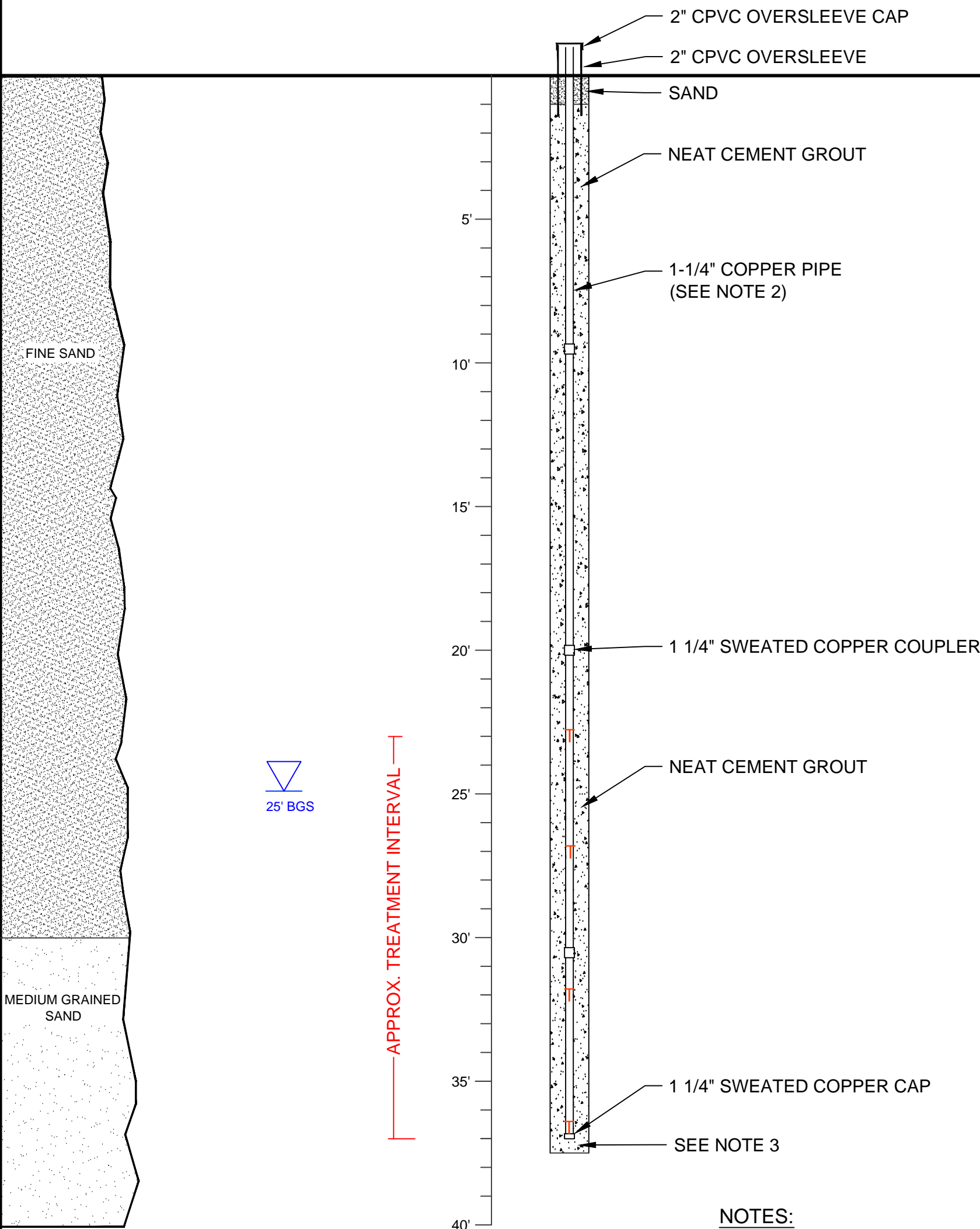
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FIGURE 4A

APPROVED  
For Construction  
AS BUILTS

ABOVE GRADE  
TEMPERATURE MONITORING POINT - ZONE 3  
TYPICAL OF 2



- NOTES:
- 1. TYPICAL OF TMP-H3, TMP-F4
  - 2. USE 10.5 FT SECTIONS OF PIPE FOR TMPs
  - 3. GROUT SHOULD EXTEND 6 INCHES BELOW BOTTOM BLACK IRON CAP

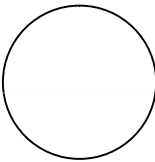
LEGEND:  
T TEMPERATURE SENSING DEVICE

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A. WAGNER

CHECKED BY  
D. OBERLE

PROJECT MANAGER  
B. MORRIS

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06/06/16

SITE  
LOCATION

SOUTHEAST ROCKFORD AREA 4

CLIENT

ROCKFORD, ILLINOIS

IL EPA

ABOVE GRADE TEMPERATURE MONITORING POINT  
DETAIL ZONE 3

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BY

DATE 06/15/16

DATE 03/31/17

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FIGURE 4B

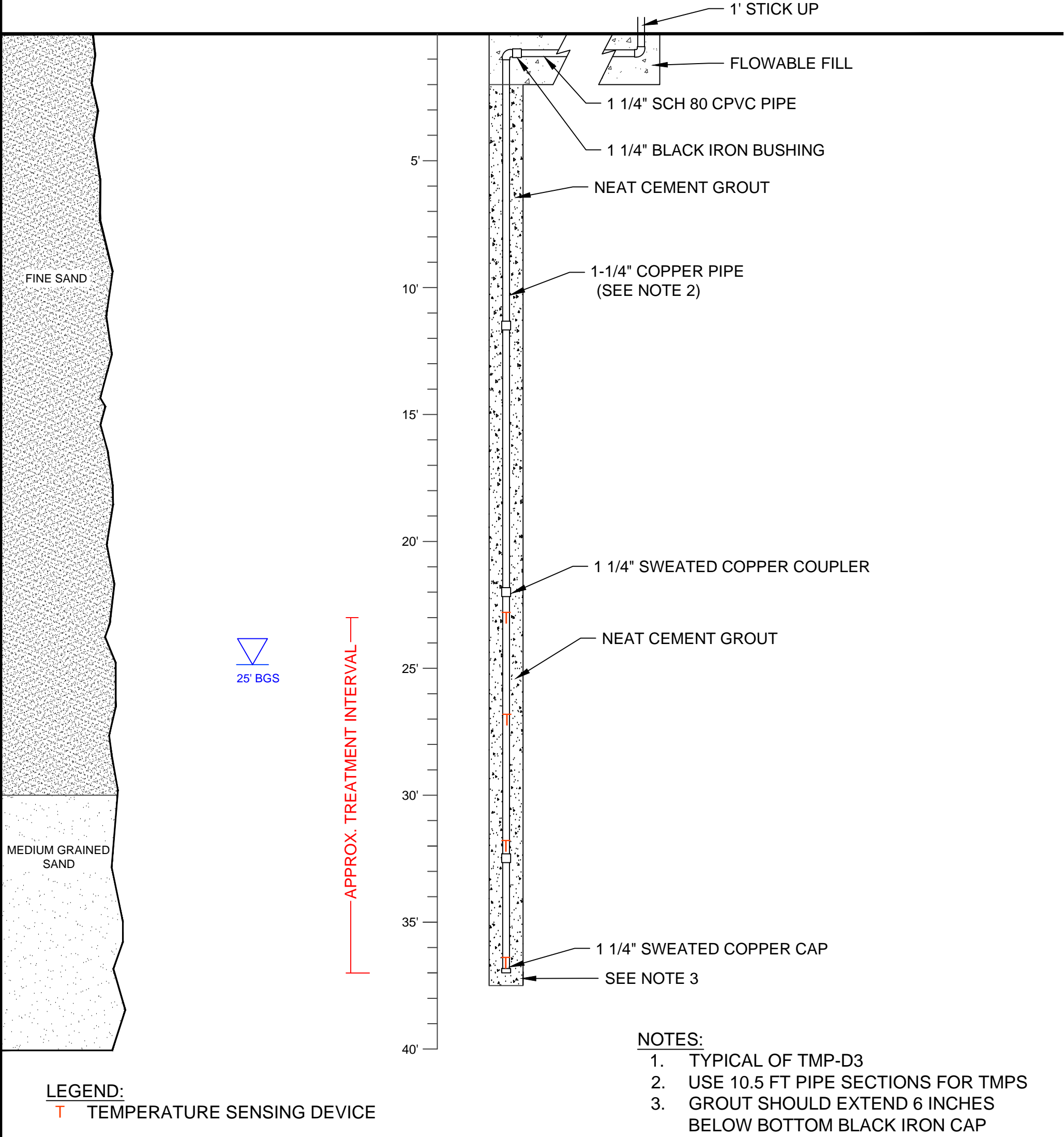


APPROVED

For Construction

AS BUILTS

BELOW GRADE  
TEMPERATURE MONITORING POINT - ZONE 3  
TYPICAL OF 1

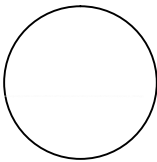


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B. MORRIS

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LOCATION  
CLIENT

SOUTHEAST ROCKFORD AREA 4  
ROCKFORD, ILLINOIS  
IL EPA

BELOW GRADE TEMPERATURE MONITORING POINT  
DETAIL ZONE 3

APPROVED FOR CONSTRUCTION

BY

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DATE

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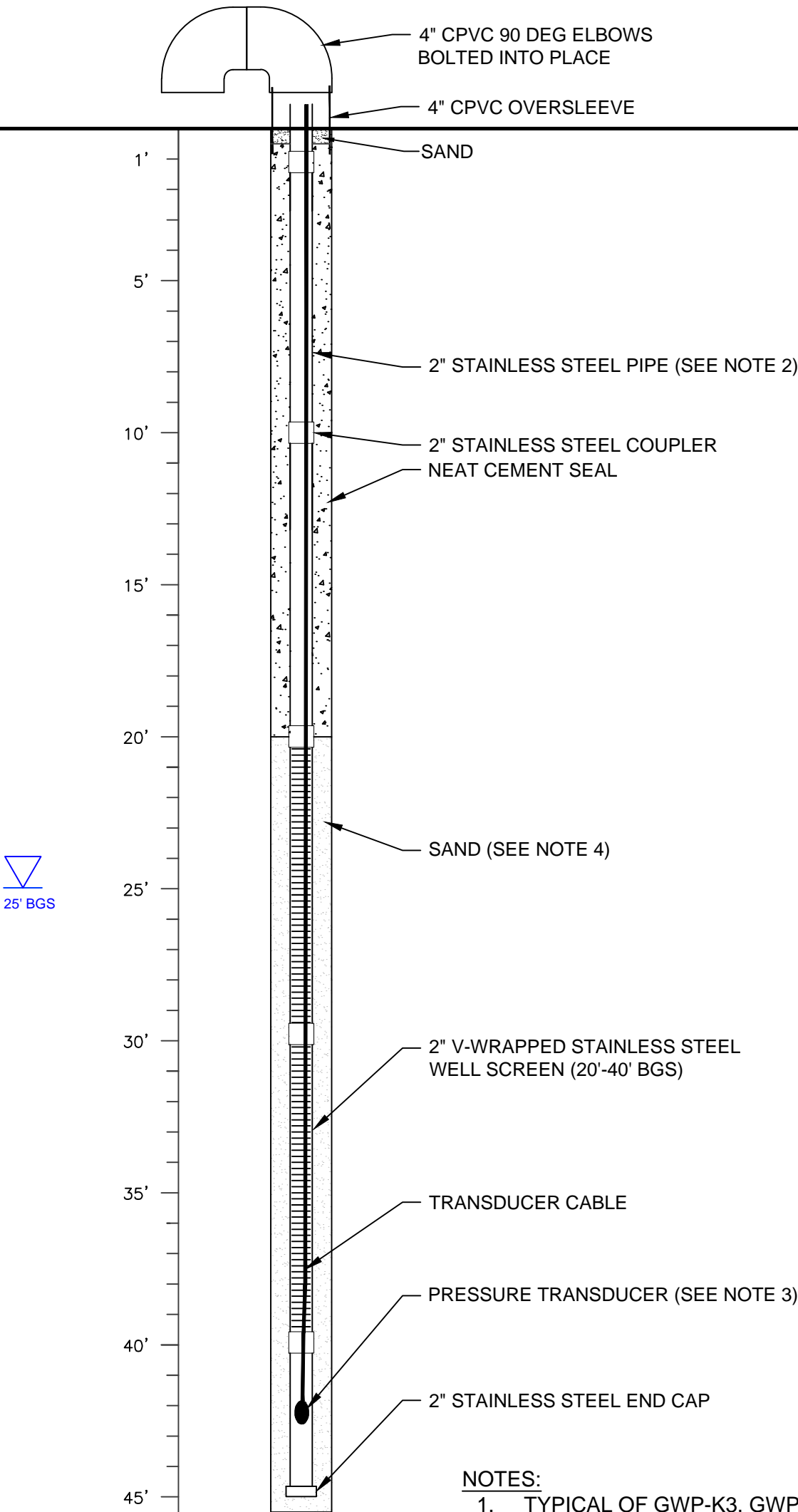
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FIGURE 4C

ABOVE GRADE GROUNDWATER PIEZOMETER  
TYPICAL OF 6



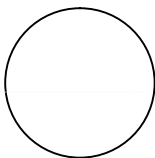
- NOTES:
- 1. TYPICAL OF GWP-K3, GWP-L4, GWP-H6, GWP-G5, GWP-F3, GWP-E3
  - 2. USE 10.5 FT SECTIONS OF PIPE FOR GWPS
  - 3. TRANSDUCER WILL SIT ABOUT 5 FT BELOW TREATMENT INTERVAL TO AVOID DAMAGE FROM ELEVATED TEMPERATURES
  - 4. SAND SHOULD BE GLOBAL #4 OR EQUIVALENT (6X16 SILICA SAND WITH 95% OF PARTICLES IN RANGE OF 0.045"-0.132")

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B. MORRIS

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SITE

LOCATION

CLIENT

SOUTHEAST ROCKFORD AREA 4

ROCKFORD, ILLINOIS

IL EPA

ABOVE GRADE GROUNDWATER  
PIEZOMETER DETAIL

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DATE 06/15/16

DATE

04/12/17

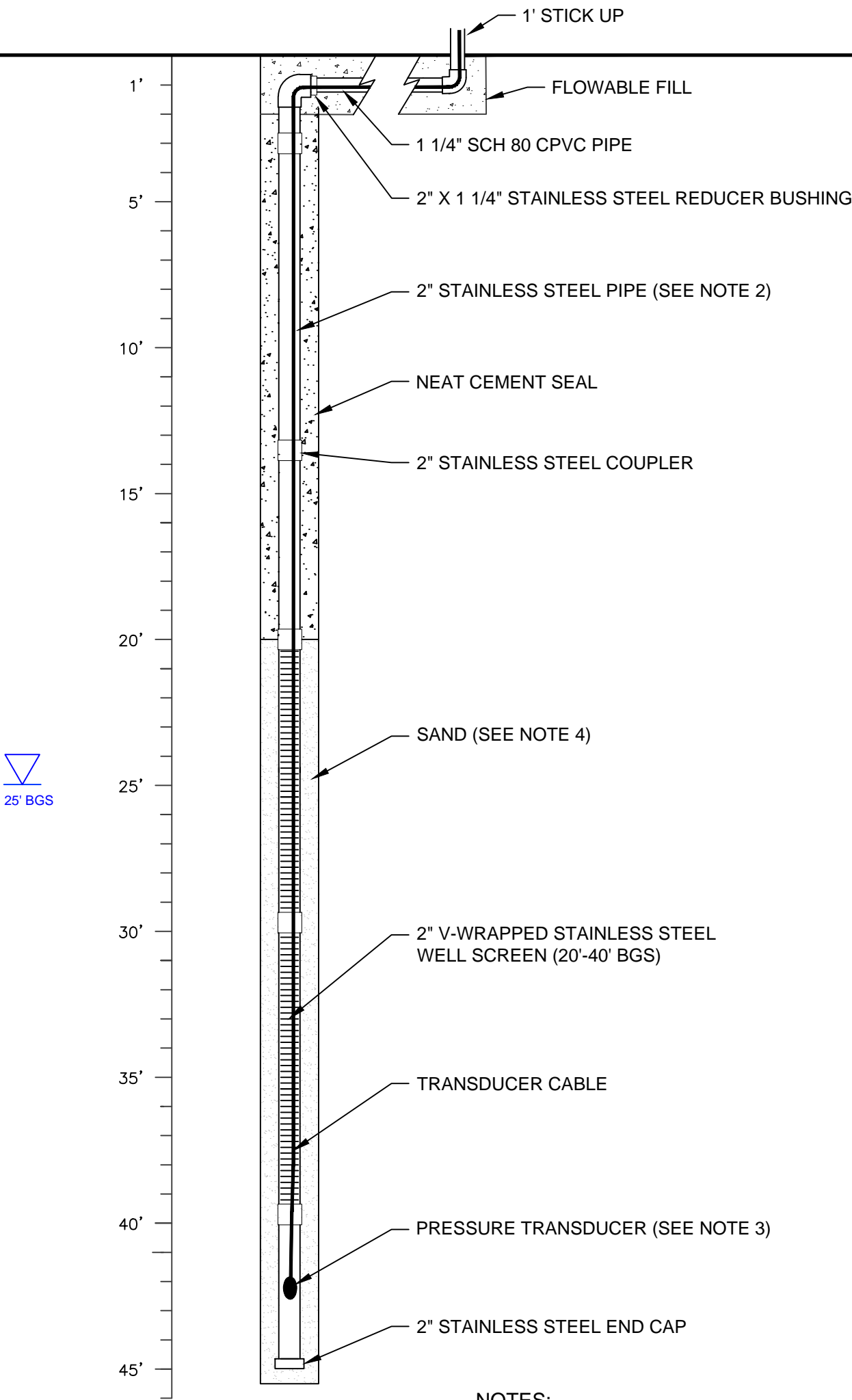
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FIGURE 5a

BELOW GRADE GROUNDWATER PIEZOMETER  
TYPICAL OF 2



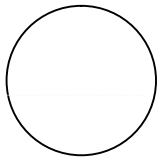
- NOTES:
1. TYPICAL OF GWP-C3, GWP-B4
  2. USE 10.5 FT SECTIONS OF PIPE FOR GWPS
  3. TRANSDUCER WILL SIT ABOUT 5 FT BELOW TREATMENT INTERVAL TO AVOID DAMAGE FROM ELEVATED TEMPERATURES
  4. SAND SHOULD BE GLOBAL #4 OR EQUIVALENT (6X16 SILICA SAND WITH 95% OF PARTICLES IN RANGE OF 0.045"-0.132")

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B. MORRIS

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ROCKFORD, ILLINOIS

CLIENT

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BELOW GRADE GROUNDWATER  
PIEZOMETER DETAIL

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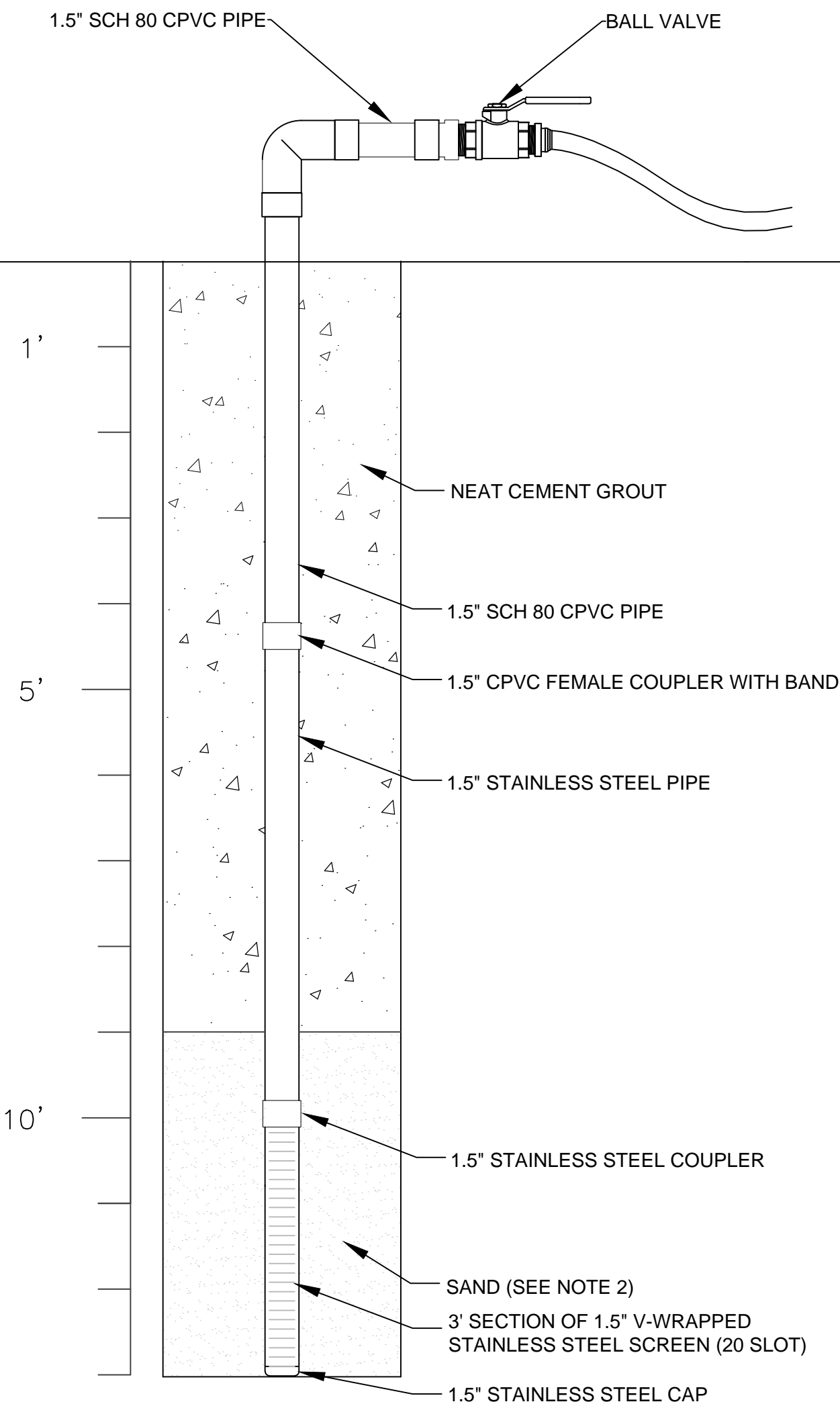
DATE 06/15/16

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FIGURE 5b



ABOVE GRADE VAPOR PIEZOMETER  
TYPICAL OF 5



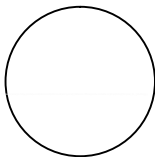
- NOTES:
- 1. TYPICAL OF VP-M6, VP-K5, VP-L4, VP-L7, VP-G4
  - 2. SAND SHOULD BE GLOBAL #4 OR EQUIVALENT (6X16 SILICA SAND WITH 95% OF PARTICLES IN RANGE OF 0.045"-0.132"

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CLIENT

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ROCKFORD, ILLINOIS  
IL EPA

ABOVE GRADE VAPOR PIEZOMETER DETAIL

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BY

DATE 06/15/16

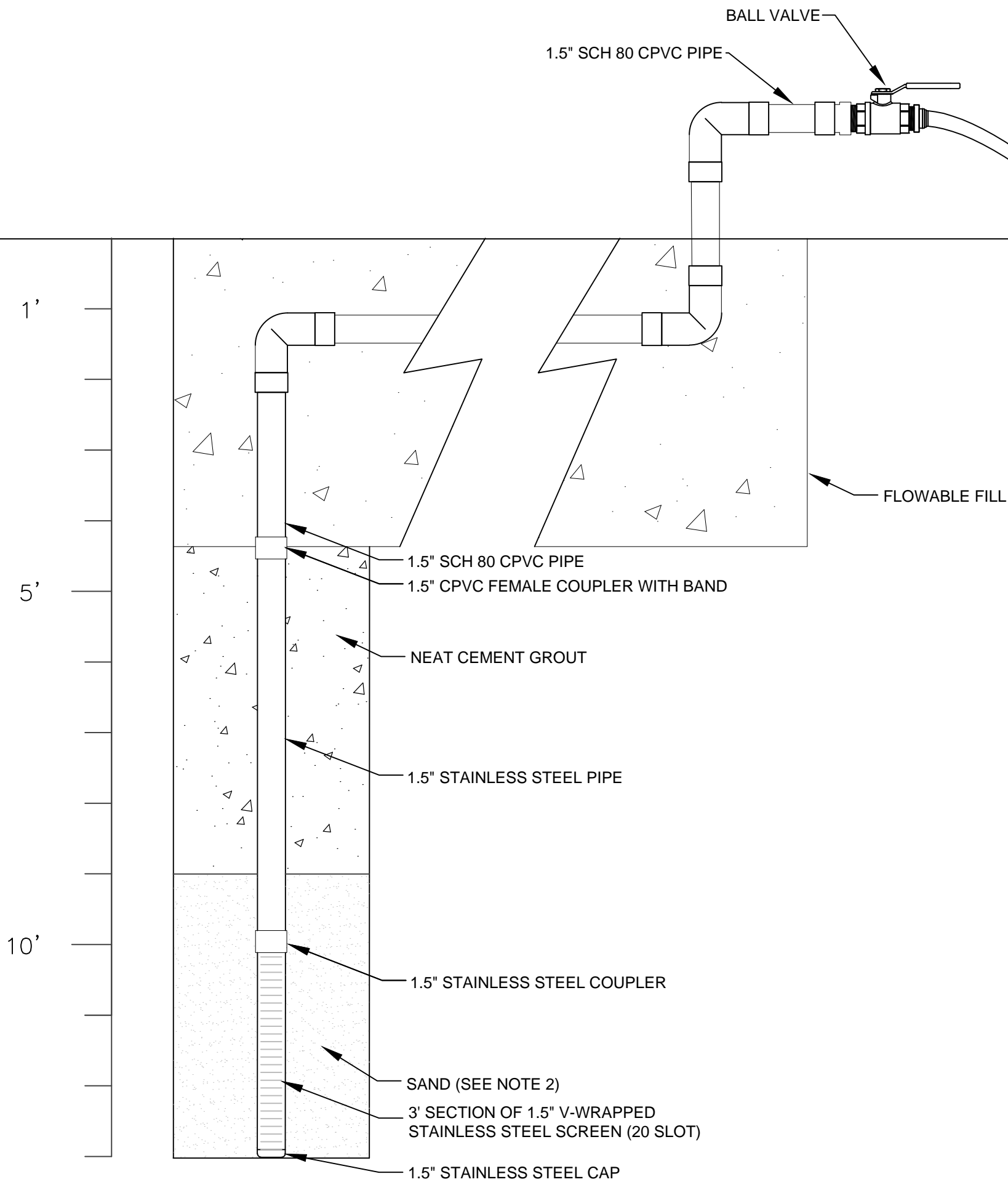
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FIGURE 6a

BELOW GRADE VAPOR PIEZOMETER  
TYPICAL OF 3



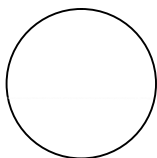
- NOTES:
- 1. TYPICAL OF VP-C2, VP-D4, VP-B4
  - 2. SAND SHOULD BE GLOBAL #4 OR EQUIVALENT (6X16 SILICA SAND WITH 95% OF PARTICLES IN RANGE OF 0.045"-0.132")

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CHECKED BY

D. OBERLE

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B. MORRIS

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CLIENT

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BELOW GRADE VAPOR PIEZOMETER DETAIL

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04/12/17

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FIGURE 6b

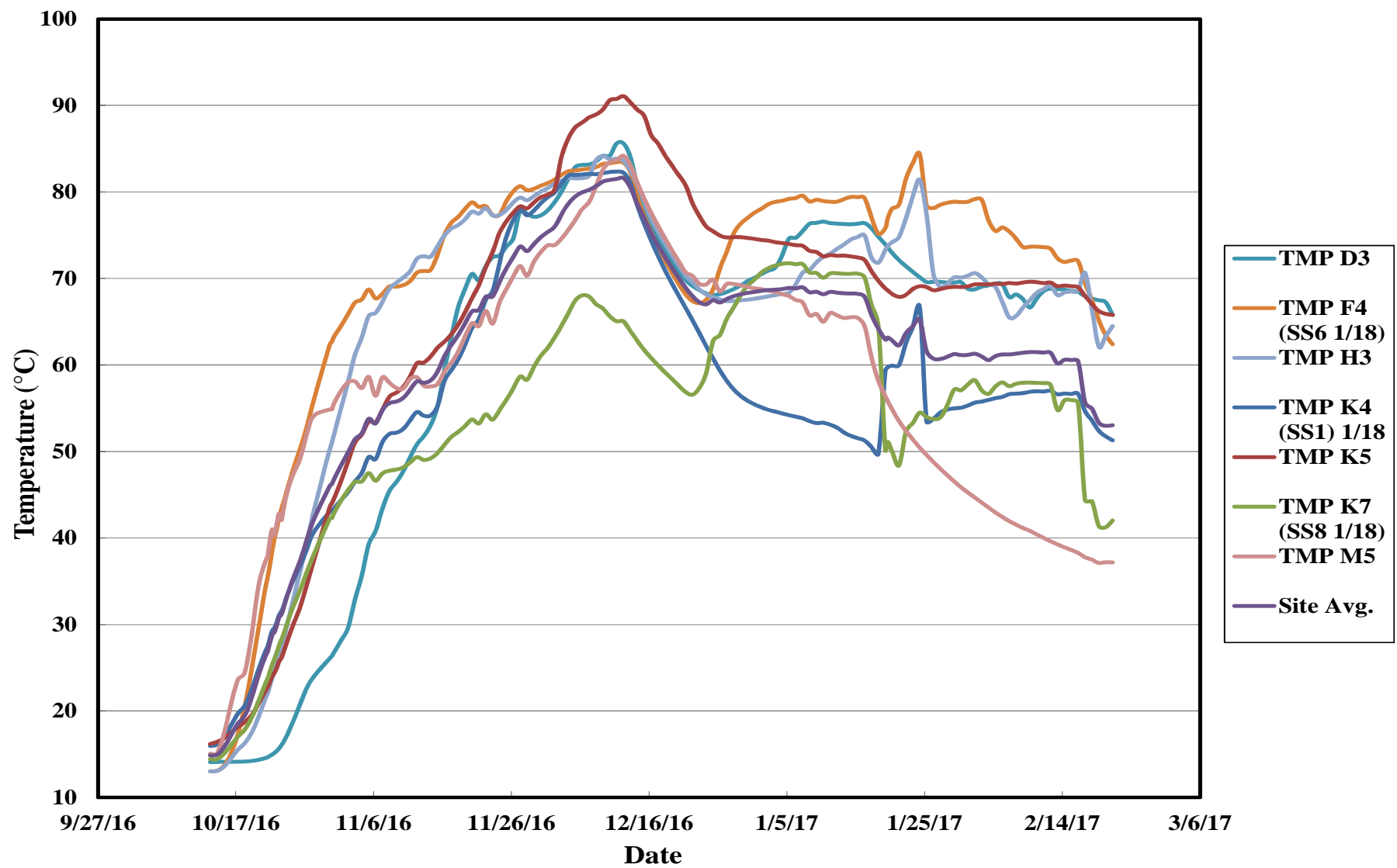
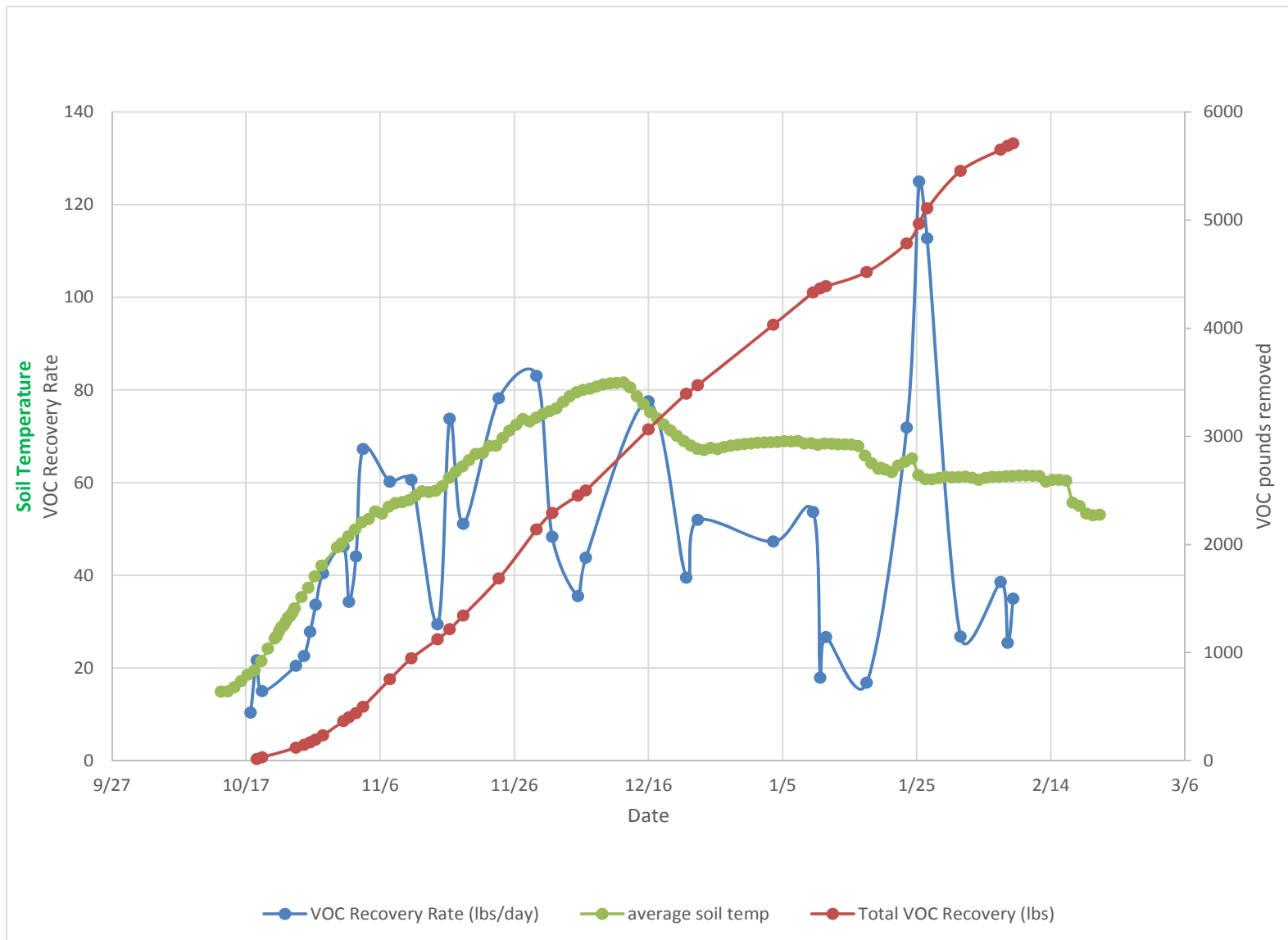


Figure 7. Average Site Temperatures





**Figure 8. CVOC Mass Removal with Average Temperature**

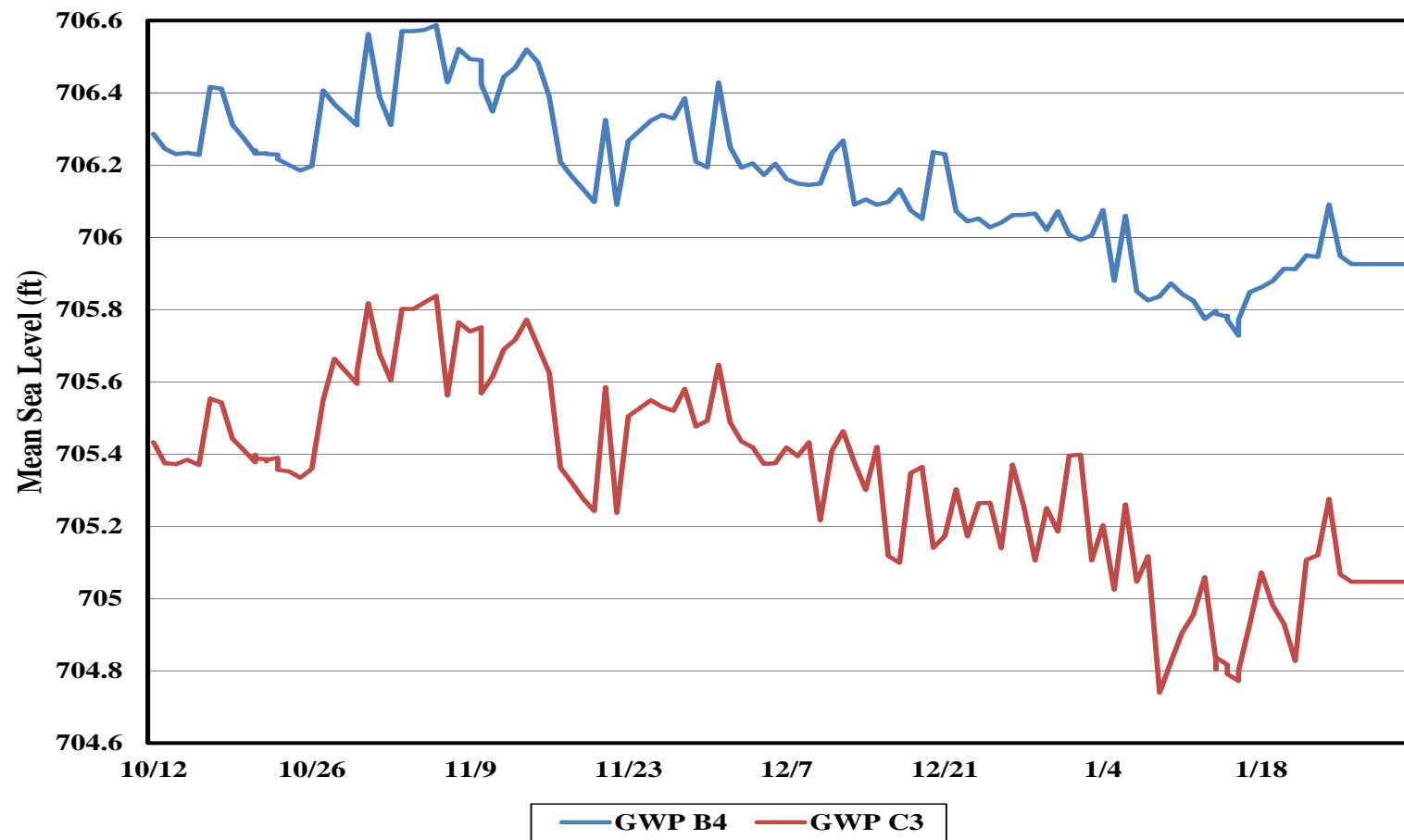


Figure 9a. GWP B4 and GWP C3

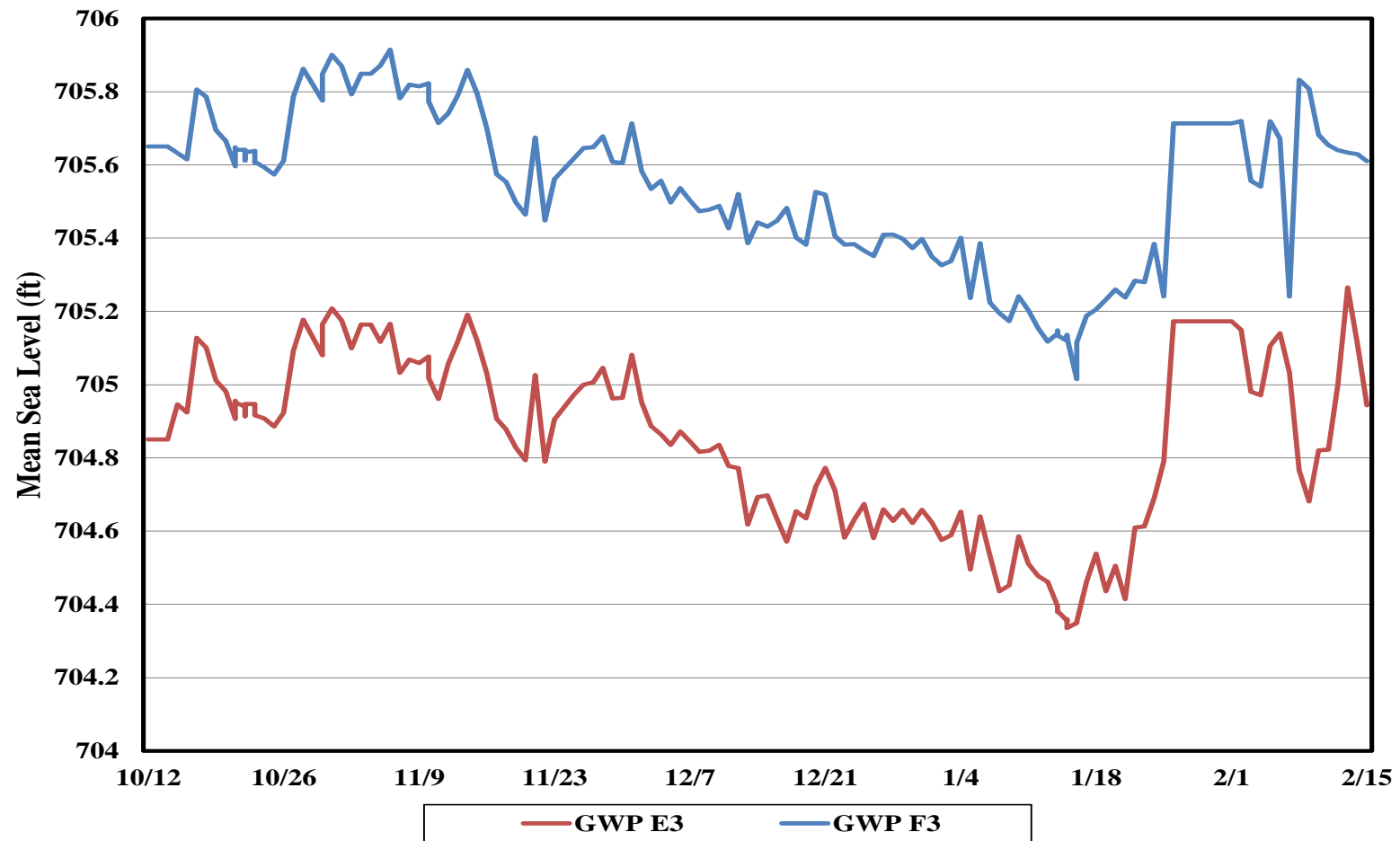


Figure 9b. GWP E3 and GWP F3



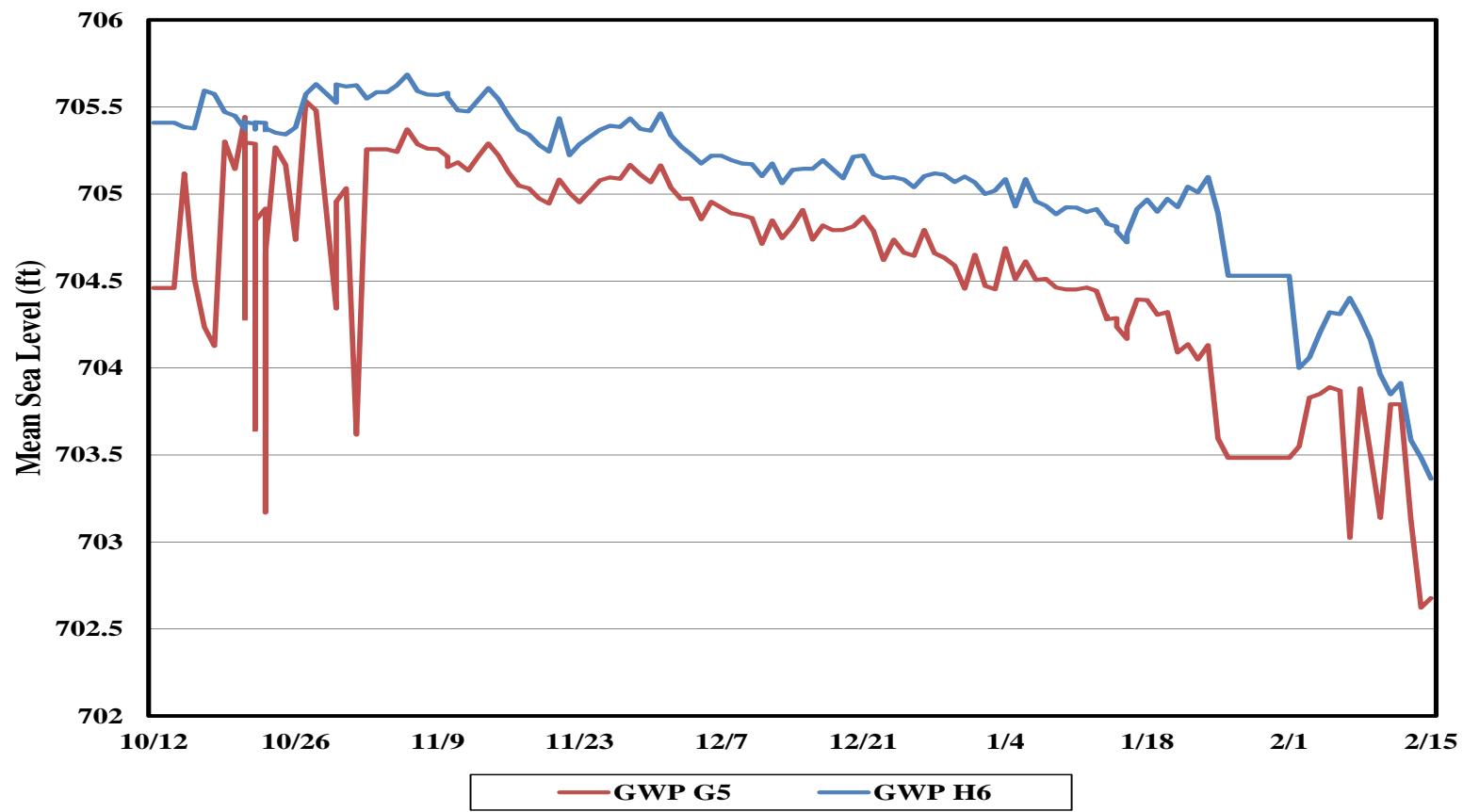


Figure 9c. GWP G5 and GWP H6

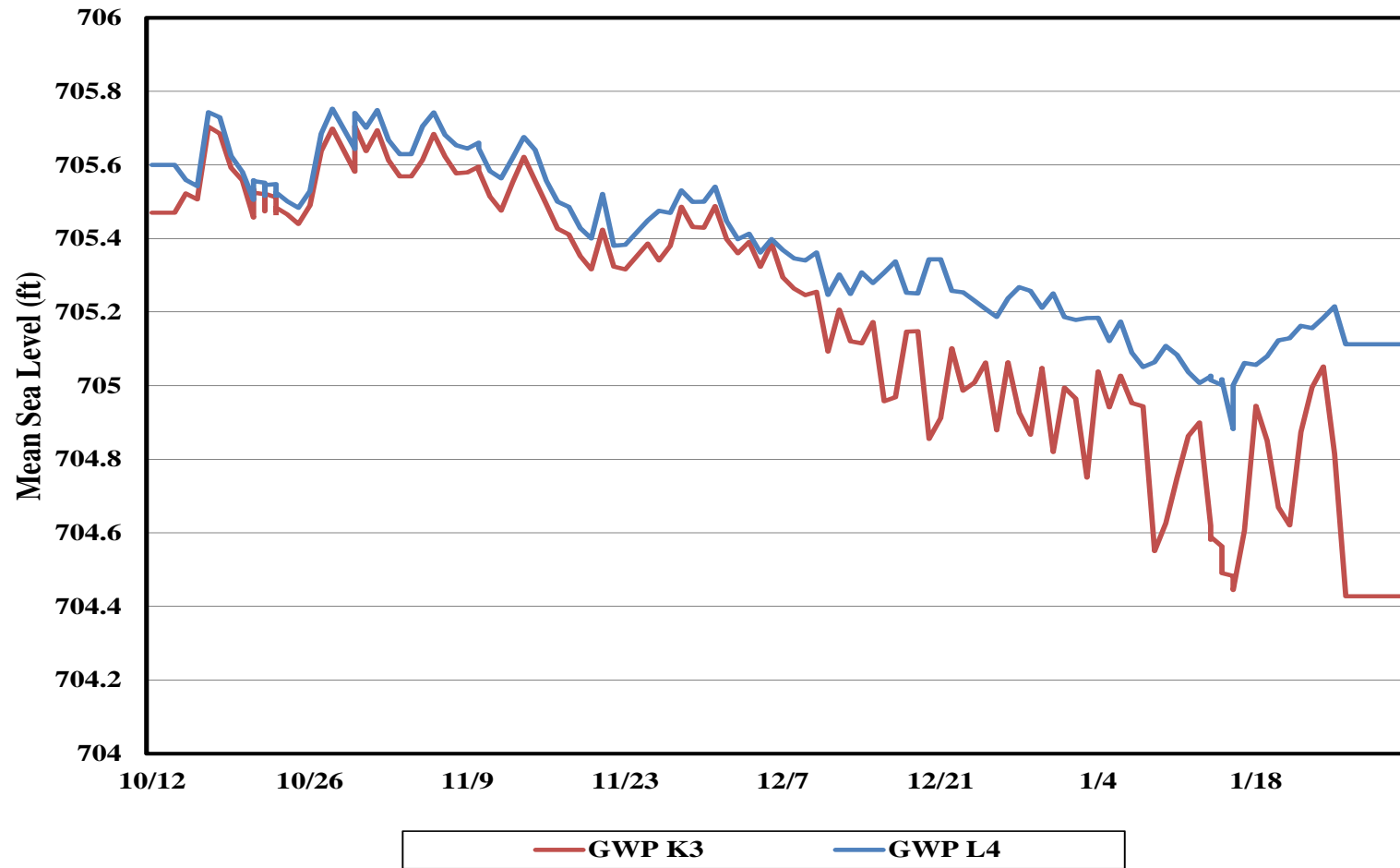


Figure 9d. GWP K3 and GWP L4

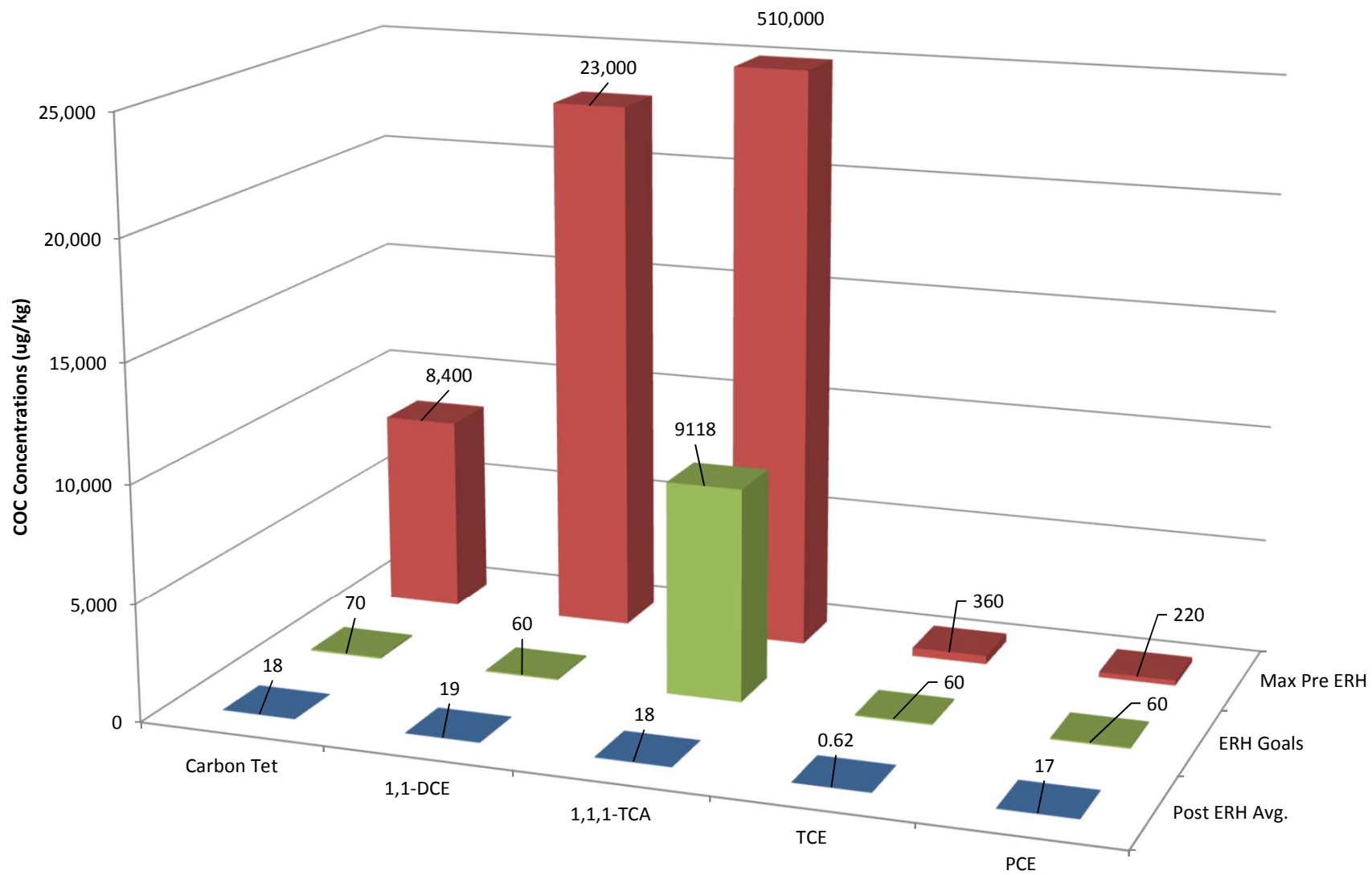
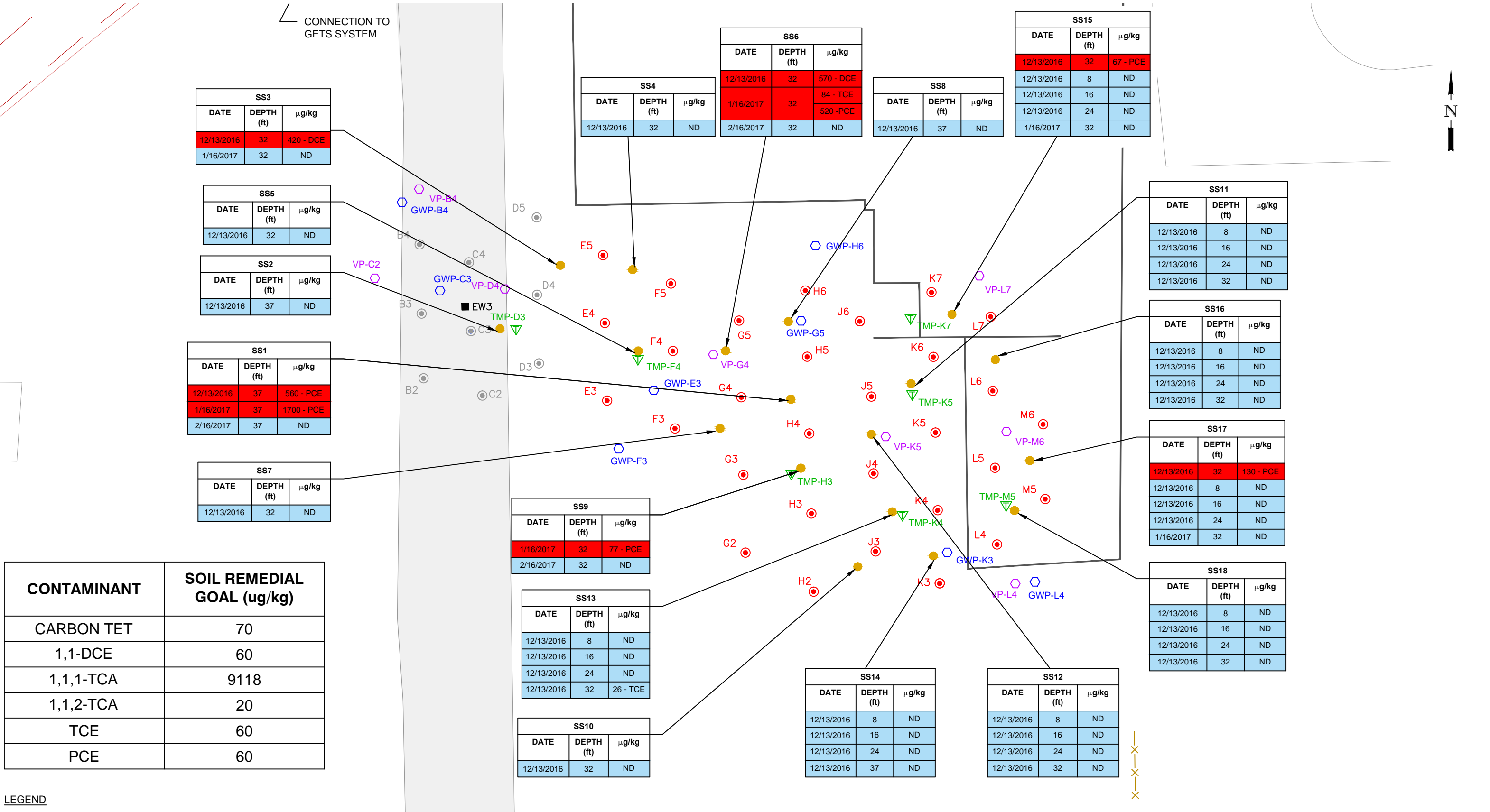


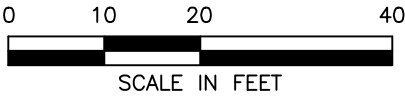
Figure 10. Pre and Post ERH Soil Results ( $\mu\text{g}/\text{kg}$ )





LEGEND

- ELECTRODE (QTY 30)
- BELOW GRADE ELECTRODE (QTY 9)
- TEMPERATURE MONITORING POINT (QTY 7)
- VAPOR PIEZOMETER (QTY 8)
- GROUNDWATER PIEZOMETER (QTY 8)



**TRS**  
Accelerating Value

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DESIGNED BY  
A. WAGNER

DRAWN BY  
A. WAGNER

CHECKED BY

PROJECT MANAGER  
B. MORRIS

QSAT REVIEW  
XX/XX/16

FOR  
SOUTHEAST ROCKFORD AREA 4  
ROCKFORD, ILLINOIS

SOIL CONFIRMATION SAMPLE RESULTS

APPROVED FOR CONSTRUCTION

BY

DATE

DATE 07/10/17

PROJECT RFD75

SHEET

FIGURE 11

## Appendix A

WINNEBAGO

LANDFILL  
COMPANY

ROCKFORD, IL

## SPECIAL WASTE PROFILE SHEET AND CERTIFICATION

Treatment Method (Check One): ☐ Solidification ☒ Direct Landfill

## A) Generator Information

Generator Name  
IEPA

(Correspondence will be sent to "Billing Name" address)

Street 1021 North Grand Ave, East  
City Springfield  
State IL Zip 62794-9276  
Contact Name  
Brian Conrath  
Phone 217-557-8155  
Fax  
State ID# 2010300074  
NAICS (SIC) Code 562910Billing Name  
TRS Group, Inc  
Street PO Box 737  
City Longview  
State WA Zip 98632  
Contact Name  
Chris Thomas  
Phone 847-376-3691  
Fax 847-635-5688

## B) Waste Description

- 1) Waste Name: Soil cuttings from contaminated portions of the site
- 2) Process Generating Waste: Soil remediation drilling
- 3) Is this waste a characteristic or listed hazardous waste as defined in CFR 40 Part 261? ☐ Yes ☒ No
- 4) Method of Shipment: ☒ Rolloff ☐ Tanker ☐ Str. Truck / Semi Other: \_\_\_\_\_
- 4a) Container Type: \_\_\_\_\_
- 5) Frequency of shipment: ☐ One Time ☐ Monthly ☐ Annually ☒ Other: likely to occur several times
- 5a) Estimated Volume: 30 tons
- 6) Waste is: ☐ Industrial Process Waste ☐ Pollution Control Waste ☐ UST or Spill Related Waste ☐ Unused or Off-Spec Product ☒ Other, please specify: Soil cuttings from drilling
- 7) Analysis attached? ☒ Yes ☐ No Comment: \_\_\_\_\_
- 8) MSDS attached? ☐ Yes ☒ No Comment: \_\_\_\_\_

## C) Physical Data

- 1) Color: Brown/Tan 4) Free Liquids? ☐ Yes ☒ No
- 2) Odor: ☐ None ☒ Mild ☐ Strong 5) Flash Point: ☐ <100°F ☐ 100-139°F ☐ 140-200°F ☒ >200°F
- 3) # of Layers: \_\_\_\_\_ Liquid \_\_\_\_\_ % 6) pH: ☐ <2 ☐ 2.1-3.9 ☒ 4-10 ☐ 10.1-12.5 ☐ > 12.5
- Solids 100 % Sludge \_\_\_\_\_ % 7) Specific Gravity: ☐ <1 ☐ 1-1 ☐ >1.6

## D) Waste Composition

soil	99+	%		%
hydrocarbons	<1	%		%
		%		%

## E) Sample Information

N/A Date Collected: 7/27/16  
Sampled by: B. MorrisGrab or Composite  
(circle)

I hereby certify, to the best of my knowledge and belief, the sample collected and analyzed is representative of the waste to be managed. If a Material Safety Data Sheet (MSDS) is provided, I hereby certify, to the best of my knowledge and belief, that it is representative of the waste to be managed.

BAE Initial



## F) Chemical Constituents

Based on analysis, provide an actual value for total constituents or TCLP concentration in ppm (mg/kg or mg/l).

### INORGANIC CONCENTRATIONS

D004	Arsenic	5.0	_____	D008	Lead	5.0	_____
D005	Barium	100.0	_____	D009	Mercury	0.2	_____
D006	Cadmium	1.0	_____	D010	Selenium	1.0	_____
D007	Chromium	5.0	_____	D011	Silver	5.0	_____

### ORGANIC CONCENTRATIONS

D018	Benzene	0.5	_____	D032	Hexachlorobenzene	0.13	_____
D019	Carbon Tetrachloride	0.5	_____	D033	Hexachlorobutadiene	0.5	_____
D021	Chlorobenzene	100.0	_____	D034	Hexachloroethane	3.0	_____
D022	Chloroform	6.0	_____	D035	Methyl Ethyl Ketone	200.0	_____
D023	o-Cresol	200.0	_____	D036	Nitrobenzene	2.0	_____
D024	m-Cresol	200.0	_____	D037	Pentachlorophenol	100.0	_____
D025	p-Cresol	200.0	_____	D038	Pyridine	5.0	_____
D026	Cresol	200.0	_____	D039	Tetrachloroethylene	0.5	_____
D027	1,4-Dichlorobenzene	7.5	_____	D040	Trichloroethylene	0.7	_____
D028	1,2-Dichloroethane	0.5	_____	D041	2,4,5-Trichlorophenol	400.0	_____
D029	1,1-Dichloroethylene	0.7	_____	D042	2,4,6-Trichlorophenol	2.0	_____
D030	2,4-Dinitrotoluene	0.13	_____	D043	Vinyl Chloride	0.2	_____

## G) Non-Hazardous Waste Certification

I hereby certify that the waste identified in this profile does not contain or has not come into contact with any hazardous waste listed in 40 CFR 261.30 – 261.33 and 35 Ill. Adm. Code 721.130 – 721.133 and is non-hazardous according to 40 CFR 261.1 – 261.20 and 35 Ill. Adm. Code 721.101 – 721.133.

I hereby agree to hold Winnebago Landfill Company harmless from any cost, damages or other liability resulting from the breach of this warranty.

Generator's Initials

BAC

## H) RCRA Pesticide/Herbicide Certification

I hereby certify that none of the following RCRA pesticides or herbicides listed below were used in the generation processes involved in the production of the waste identified in this profile and, to the best of my knowledge and belief, the waste does not contain hazardous concentrations of these substances.

*Chlordane, Endrin, Heptachlor and its epoxide, Lindane, Methoxychlor, Toxaphene, 2,4-D and 2,4,5-TP Silvex*

Generator's Initials

BAC

## I) PCB/Waste Solvents Certification

I hereby certify that no polychlorinated biphenyls (PCBs) or RCRA F-Listed waste solvents were used in the generation processes involved in the production of the waste identified above and, to the best of my knowledge and belief, the waste does not contain hazardous concentrations of these substances.

I hereby agree to hold Winnebago Landfill Company harmless from any cost, damages or other liability resulting from the breach of this warranty.

Generator's Initials

BAC

## J) Cyanide/Sulfide Certification

For wastes containing greater than 10 ppm reactive cyanide or reactive sulfide, I hereby certify that none of the following has occurred:

1. The waste has caused injury to a worker because of H<sub>2</sub>S or HCN generation;
2. The OSHA work place air concentration limits for H<sub>2</sub>S or HCN have been exceeded in areas where the waste is generated, stored or otherwise handled; and
3. Air concentrations of H<sub>2</sub>S or HCN have been encountered above a few ppm in areas where the waste is generated, stored or otherwise handled.

Generator's Initials

BAC

## GENERATOR CERTIFICATION

I, Brian Conrath  
hereby certify that the above and attached documentation is complete and accurate to the best of my knowledge and ability. No deliberate or willful omissions of composition or properties exist and that all known or suspected hazards have been disclosed. I also certify that the waste stream is, to the best of my knowledge, non-hazardous and as such does not contain any constituent that would cause the waste to be a listed or characteristic waste under RCRA.

Signature Brian A. Conrath Title Project Manager Date 23 Aug 2016

Office Use Only:

Profile # \_\_\_\_\_

**WINNEBAGO LANDFILL COMPANY**

8403 LINDENWOOD \* ROCKFORD, IL 61109

OFFICE: 815-874-4806 SCALEHOUSE: 815-874-7375 FAX: 815 874 4630

VISIT US ONLINE @ [www.winnebagolandfill.com](http://www.winnebagolandfill.com)**CHARGE TICKET**

DATE: 09/01/16

TICKET #: 1375214

NAME : TRS GROUP

TIME IN: 09:27 AM

TIME OUT: 10:08 AM

ACCT #: 489862

WEIGHMASTER: LINDA

TRUCK#: KEL0027

ORIGIN:

PO/JOB #:

NOTES: WLF16098-CN / IEPA

MATERIAL

GROSS WT.: 77,100 LBS 38.55 TONS

002

TARE WT.: 41,080 LBS 20.54 TONS

CONTAMINATED SOIL

NET WT.: 36,020 LBS 18.01 TONS



AUTHORIZED SIGNATURE:

**WINNEBAGO LANDFILL COMPANY**

8403 LINDENWOOD \* ROCKFORD, IL 61109

OFFICE: 815-874-4806 SCALEHOUSE: 815-874-7375 FAX: 815 874 4630

VISIT US ONLINE @ [www.winnebagolandfill.com](http://www.winnebagolandfill.com)**CHARGE TICKET**

DATE: 09/01/16

TICKET #: 1375282

NAME : TRS GROUP

TIME IN: 11:02 AM

TIME OUT: 11:37 AM

ACCT #: 489862

WEIGHMASTER: LINDA

TRUCK#: KEL0027

ORIGIN:

PO/JOB #:

NOTES: WLF16098-D / IEPA

MATERIAL

GROSS WT.: 80,540 LBS 40.27 TONS

002

TARE WT.: 41,040 LBS 20.52 TONS

CONTAMINATED SOIL

NET WT.: 39,500 LBS 19.75 TONS



AUTHORIZED SIGNATURE:

**WINNEBAGO LANDFILL COMPANY**

8403 LINDENWOOD \* ROCKFORD, IL 61109

OFFICE: 815-874-4806 SCALEHOUSE: 815-874-7375 FAX: 815 874 4630

VISIT US ONLINE @ [www.winnebagolandfill.com](http://www.winnebagolandfill.com)**CHARGE TICKET**

DATE: 09/01/16

TICKET #: 1375329

NAME : TRS GROUP

TIME IN: 12:32 PM

TIME OUT: 01:11 PM

ACCT #: 489862

WEIGHMASTER: LINDA

TRUCK#: KEL0027

ORIGIN:

PO/JOB #:

NOTES: WLF16098-D / IEPA

MATERIAL

GROSS WT.: 79,040 LBS 39.52 TONS

002

TARE WT.: 41,040 LBS 20.52 TONS

CONTAMINATED SOIL

NET WT.: 38,000 LBS 19.00 TONS



AUTHORIZED SIGNATURE:

**WINNEBAGO LANDFILL COMPANY**

8403 LINDENWOOD \* ROCKFORD, IL 61109

OFFICE: 815-874-4806 SCALEHOUSE: 815-874-7375 FAX: 815 874 4630

VISIT US ONLINE @ [www.winnebagolandfill.com](http://www.winnebagolandfill.com)**CHARGE TICKET**

DATE: 08/29/16

TICKET #: 1374058

NAME : TRS GROUP

TIME IN: 10:09 AM

TIME OUT: 11:03 AM

ACCT #: 489862

WEIGHMASTER: LINDA

TRUCK#: KEL0027

ORIGIN:

PO/JOB #:

NOTES: WLF16098-DL / IEPA

MATERIAL

GROSS WT.: 66,000 LBS 33.00 TONS

002

TARE WT.: 41,040 LBS 20.52 TONS

CONTAMINATED SOIL

NET WT.: 24,960 LBS 12.48 TONS



AUTHORIZED SIGNATURE:



**WINNEBAGO LANDFILL COMPANY**

8403 LINDENWOOD \* ROCKFORD, IL 61109

OFFICE: 815-874-4806 SCALEHOUSE: 815-874-7375 FAX: 815 874 4630

VISIT US ONLINE @ [www.winnebago landfill.com](http://www.winnebago landfill.com)**CHARGE TICKET**

DATE: 08/29/16

TICKET #: 1374189

NAME : TRS GROUP  
ACCT #: 489862  
TRUCK#: KEL0027

TIME IN: 01:20 PM      TIME OUT: 01:56 PM  
WEIGHMASTER: LINDA  
ORIGIN:  
PO/JOB #:

NOTES: WLF16098-DL / IEPA

MATERIAL	GROSS WT.:	64,000 LBS	32.00 TONS
002	TARE WT.:	40,900 LBS	20.45 TONS
CONTAMINATED SOIL	NET WT.:	23,100 LBS	11.55 TONS



AUTHORIZED SIGNATURE:

**WINNEBAGO LANDFILL COMPANY**

8403 LINDENWOOD \* ROCKFORD, IL 61109

OFFICE: 815-874-4806 SCALEHOUSE: 815-874-7375 FAX: 815 874 4630

VISIT US ONLINE @ [www.winnebago landfill.com](http://www.winnebago landfill.com)**CHARGE TICKET**

DATE: 08/29/16

TICKET #: 1374147

NAME : TRS GROUP  
ACCT #: 489862  
TRUCK#: KEL0027

TIME IN: 12:02 PM      TIME OUT: 12:31 PM  
WEIGHMASTER: LINDA  
ORIGIN:  
PO/JOB #:

NOTES: Manual Wt.

MATERIAL	GROSS WT.:	63,880 LBS	31.94 TONS
002	TARE WT.:	41,060 LBS	20.53 TONS
CONTAMINATED SOIL	NET WT.:	22,820 LBS	11.41 TONS



AUTHORIZED SIGNATURE:

**WINNEBAGO LANDFILL COMPANY**

8403 LINDENWOOD \* ROCKFORD, IL 61109

OFFICE: 815-874-4806 SCALEHOUSE: 815-874-7375 FAX: 815 874 4630

VISIT US ONLINE @ [www.winnebagolandfill.com](http://www.winnebagolandfill.com)**CHARGE TICKET**

DATE: 08/29/16

TICKET #: 1374141

NAME : TRS GROUP

TIME IN: 11:55 AM

TIME OUT: 12:25 PM

ACCT #: 489862

WEIGHMASTER: LINDA

TRUCK#: KEL0029

ORIGIN:

PO/JOB #:

NOTES: WLF16098-DL IEPA

MATERIAL

GROSS WT.: 64,440 LBS 32.22 TONS

002

TARE WT.: 40,140 LBS 20.07 TONS

CONTAMINATED SOIL

NET WT.: 24,300 LBS 12.15 TONS



AUTHORIZED SIGNATURE:

**WINNEBAGO LANDFILL COMPANY**

8403 LINDENWOOD \* ROCKFORD, IL 61109

OFFICE: 815-874-4806 SCALEHOUSE: 815-874-7375 FAX: 815 874 4630

VISIT US ONLINE @ [www.winnebagolandfill.com](http://www.winnebagolandfill.com)**CHARGE TICKET**

DATE: 08/29/16

TICKET #: 1374234

NAME : TRS GROUP

TIME IN: 02:49 PM

TIME OUT: 03:22 PM

ACCT #: 489862

WEIGHMASTER: BREANNA

TRUCK#: KEL0027

ORIGIN:

PO/JOB #:

NOTES:

MATERIAL

GROSS WT.: 70,780 LBS 35.39 TONS

002

TARE WT.: 40,820 LBS 20.41 TONS

CONTAMINATED SOIL

NET WT.: 29,960 LBS 14.98 TONS



AUTHORIZED SIGNATURE:

**WINNEBAGO LANDFILL COMPANY**

8403 LINDENWOOD \* ROCKFORD, IL 61109

OFFICE: 815-874-4806 SCALEHOUSE: 815-874-7375 FAX: 815 874 4630

VISIT US ONLINE @ [www.winnebago landfill.com](http://www.winnebago landfill.com)**CHARGE TICKET**

DATE: 08/29/16

TICKET #: 1374179

NAME : TRS GROUP

TIME IN: 01:10 PM

TIME OUT: 01:47 PM

ACCT #: 489862

WEIGHMASTER: LINDA

TRUCK#: KEL0029

ORIGIN:

PO/JOB #:

NOTES: WLF16098-DL IEPA

MATERIAL

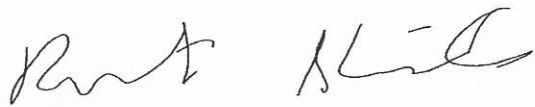
GROSS WT.: 62,220 LBS 31.11 TONS

002

TARE WT.: 40,060 LBS 20.03 TONS

CONTAMINATED SOIL

NET WT.: 22,160 LBS 11.08 TONS



AUTHORIZED SIGNATURE:

**WINNEBAGO LANDFILL COMPANY**

8403 LINDENWOOD \* ROCKFORD, IL 61109

OFFICE: 815-874-4806 SCALEHOUSE: 815-874-7375 FAX: 815 874 4630

VISIT US ONLINE @ [www.winnebago landfill.com](http://www.winnebago landfill.com)**CHARGE TICKET**

DATE: 08/29/16

TICKET #: 1374059

NAME : TRS GROUP

TIME IN: 10:10 AM

TIME OUT: 11:03 AM

ACCT #: 489862

WEIGHMASTER: LINDA

TRUCK#: KEL0029

ORIGIN:

PO/JOB #:

NOTES: WLF16098-DL / IEPA

MATERIAL

GROSS WT.: 63,020 LBS 31.51 TONS

002

TARE WT.: 41,040 LBS 20.52 TONS

CONTAMINATED SOIL

NET WT.: 21,980 LBS 10.99 TONS



AUTHORIZED SIGNATURE:



## Spent Carbon Profile Form

118 Park Road, Darlington, PA 16115  
Phone (724) 827-8181 • Fax (724) 827-2257  
EPA ID: PAD 987 270 725

## Generator Information

1) a) Generator:	<u>IEPA</u>	c) Site:	<u>Southeast Rockford Area 4</u>
Mailing Address:	<u>1021 N. Grand Ave. East</u>	Site Address:	<u>2613 S. 11th St.</u>
	<u>Springfield, IL 62702</u>		<u>Rockford, IL 61109</u>
	_____		_____
Name:	<u>Brian Conrath</u>		_____
Phone:	<u>217-557-8155</u>		_____
Email:	<u>Brian.Conrath@Illinois.gov</u>	d) EPA ID #:	<u>ILD981000417</u>
b) Consultant:	<u>CDM Smith</u>	Name:	<u>John Grabs</u>
Mailing Address:	<u>125 S. Wacker Drive, Suite 600</u>	Phone:	<u>312-780-7737</u>
	<u>Chicago, IL 60606</u>	Fax:	<u>312-346-5228</u>
	_____	Email:	<u>grabsjc@cdmsmith.com</u>

## Spent Carbon Information

2) Carbon Application:

<input type="checkbox"/> Waste Water (WW)	<input type="checkbox"/> Solvent Recovery (SR)	<input type="checkbox"/> Potable Water (PW)	<input type="checkbox"/> SVE (AF)
<input type="checkbox"/> Ground Water (GW)	<input type="checkbox"/> Chem. Processing (CP)	<input type="checkbox"/> Food Processing (FP)	<input type="checkbox"/> Other _____
<input type="checkbox"/> Water Treatment (WT)	<input type="checkbox"/> Air Filtration (HVAC)	<input type="checkbox"/> VOC Control (AF)	
<input type="checkbox"/> Aqueous	<input checked="" type="checkbox"/> Vapor	<input type="checkbox"/> Foreign Material (rock, dirt, sand etc)	

If this is a renewal, provide the existing profile approval number \_\_\_\_\_

3) Application Systems Description. Please provide original process details generating constituent (s), (manufacturing, releases etc.) Verify if process /Spent Carbon is considered a listed waste. If not why? If state/federal or other remediation cleanup, please provide historical information. ie..State/EPA records of decision, influent data and or other site historical characterization

IL State Superfund Site impacted by TCA and other VOCs due to a previous site activities associated with a machine shop. Current carbon generated from soil vapor extraction system with electrical resistivity heat accelerator.

4) a.) Carbon type:

<input type="checkbox"/> Lignite	<input type="checkbox"/> Coconut	<input checked="" type="checkbox"/> Granular	b.) Mesh size:	<input type="checkbox"/> 8x30	<input checked="" type="checkbox"/> 4x10	<input type="checkbox"/> 4x6
<input type="checkbox"/> Coal	<input type="checkbox"/> Wood	<input type="checkbox"/> Pellet		<input type="checkbox"/> 12x40	<input type="checkbox"/> 6x16	<input type="checkbox"/> Other _____
<input type="checkbox"/> Impregnat	<input type="checkbox"/> Powder					
<input type="checkbox"/> Other approved non carbon sorbents						

c.) Annual Usage: 24,000 lbs      d.) System Fill Quantity: 12,000 lbs      e.) Current Volume: 12,000 lbs

Will reactivated carbon be returned to the generator? ☐ Yes ☒ No

5) Handling: ☐ Bulk ☐ Drum ☐ Bulk Bag ☒ Adsorber ☐ Other

## Regulatory Information

- 6) Is the Spent Carbon a RCRA regulated material as per 40 CFR 261 or is the spent carbon a hazardous waste per 25 PA Code 261a? ☐ Yes ☐ No

If yes, list codes

\_\_\_\_\_

- Is the Spent Carbon a State Hazardous Waste? If yes, list waste code (s): ☐ Yes ☐ No

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

- 7) Does the Spent Carbon treat or contain any of the following:

- |  |   |  |
|--|---|--|
| A. Polychlorinated Biphenyls (PCBs)                              | <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No |
| B. Dibromochloropropane (DBCP)                                   | <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No |
| C. Dioxins and/or Furans   | <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No |
| D. Pesticides or Herbicides                                      | <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No |
| E. Halogenated Compounds   | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No            |
| F. Sulfur Containing Compounds                                   | <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No |
| G. Cyanide Containing Compounds                                  | <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No |
| H. Radioactive Material/Explosive/Pyrophoric and Shock Sensitive | <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No |
| I. Heavy Metals (Identify, if yes, run total analysis)           | <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No |
| J. Chlorinated Phenols   | <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No |

**Special Testing Required**

**Metals** ☐ Arsenic ☐ Antimony ☐ Barium ☐ Beryllium ☐ Chromium ☐ Cadmium ☐ Lead  
☐ Mercury ☐ Selenium ☐ Silver ☐ Thallium ☐ Other \_\_\_\_\_

- 8) a) pH: ☐ <2 ☐ 10.5 – 12.4 b) Flash Point: ☐ <70 ☐ 101-140  
☐ 2 – 4 ☐ >12.5 ☐ 70-100 ☒ > 140  
☒ 4.1 – 10.5

**Descriptions**

- 9) Foreign material? (if yes please describe or estimate quantity) ☐ Yes ☒ No
- 10) Strong Odor? If yes, please describe ☐ Yes ☒ No
- 11) Is Spent Carbon generated from a Superfund Site ☒ Yes ☐ No Record of Decision (ROD) Required
- 12) Is the Spent Carbon generated from any activity at a chemical manufacturing plant, petroleum refinery or coke by-product recovery plant, i.e., a facility subject to Subpart FF (the Benzene Waste NESHAP)? If yes complete Addendum A ☐ Yes ☒ No
- 13) Is this waste subject to one of the following NESHAP rules:
- a) Hazardous Organic NESHAP (HON) ☐ Yes ☒ No
- b) Pharmaceuticals production (subpart GGG) ☐ Yes ☒ No

## Process Schematic / Sketch

Please provide schematic / sketch of process below or attach to profile.

## Spent Carbon Composition

14)	<u><b>Constituents:</b></u>	<u><b>% by Weight</b></u>	
	Activated Carbon	98	%
	Water (Moisture)	1	%
	Organic Contaminants (list below)	%	Organic Contaminants (list below)
	1		TCA

15) I certify that

BAC

Initials A)

The spent carbon material described in this "Spent Carbon Profile Form" does not contain greater than or equal to 50 PPM polychlorinated biphenyls (PCBs) nor any dibenzo-p-dioxins in concentrations greater than or equal to 20 PPB in 2,3,7,8-TCDD Toxicity Equivalents (TEF) on the Carbon as may be calculated by the application of the most recent Toxicity Equivalency Factors (TEFs) as published by the USEPA;

BAC

Initials B)

The influent to the spent carbon material described in the "Spent Carbon Profile Form" did not contain greater than or equal to 50 PPM of Polychlorinated biphenyls (PCBs). The subject carbon is not regulated under 40 CFR Part 761.

16) **Certification of Documents by Generator**

I hereby certify that all information on this and all attached documents are true and that this information accurately describes the subject spent carbon. I further certify that all samples and analyses submitted are representative of the subject spent carbon in accordance with the procedures established in 40 CFR 261 Appendix I or by using an equivalent method allowed by the PA Department of Environmental Protection. All relevant information regarding known or suspected hazards in the possession of the generator has been disclosed. I authorize Evoqua Water Technologies obtain a sample from any waste shipment for purposes of confirmation or further investigation. If I am a consultant signing on behalf of the generator, I have their proper approval.

Official: Brian A. Conrath Title: Remedial Project Manager

Signature: Brian A. Conrath Date: 23 Dec 2016





January 11, 2017

**Customer Mailing Address:**

Brian Conrath  
IEPA  
1021 N. Grand Avenue East  
Springfield, IL. 62702  
Phone: (217) 557-8155

**Site Address:**

Southeast Rockford Area 4  
2613 S. 11th Street  
Rockford, IL 61109

**Generator Mailing Address:**

IEPA  
1021 N. Grand Avenue East  
Springfield, IL 62702  
217-557-8155  
EPA Number: ILD981000417

**RE Non-Hazardous Approval Notification  
SCID/PROFILE: EWT-IEPAIL-AF**

*Evoqua Water Technologies LLC hereby gives notice that the above mentioned SCID/PROFILE has been approved for acceptance and has all the necessary permits and licenses for the waste that has been characterized and identified by the profile:*

**PAD987270725 (Darlington) RCRA Hazardous Waste Storage and Thermal Treatment Permit**

**Waste Codes:** NONE

**Effective Dates of Approval:** 1/23/2017 - 1/23/2018

**Approved for Plant:** DARLINGTON

**May Be Received/Shipped:** 1/23/2017

**Carbon Type:** Granular

**Carbon Mesh Size:** 4X10

**Approved Handling Methods:** Adsorbers - Bulk Bags -

**BP11:** OK

**Approval No: (SCID/PROFILE)** EWT-IEPAIL-AF

We request that this number is used in all future correspondence pertaining to this spent carbon.

**Documents required for each shipment:**

Non-Hazardous Shipping Documents and Labels

**Please contact your local or inside sales representative to schedule shipment. At least 48 hours is required before shipment to secure a dock time.**

Please call the Environmental Health & Safety Department (724-827-8181 x570) if you have any questions.

Thank you,

A handwritten signature in black ink that reads "Willi N. Bailey". The signature is written in a cursive, flowing style.

Bill Bailey  
Department of Environmental Affairs

## Spent Carbon Profile Form

118 Park Road, Darlington, PA 16115  
Phone (724) 827-8181 • Fax (724) 827-2257  
EPA ID: PAD 987 270 725

## Generator Information

1) a) <b>Generator:</b>	<u>IEPA</u>	c) <b>Site:</b>	<u>Southeast Rockford Area 4</u>
Mailing Address:	<u>1021 N. Grand Ave. East</u>	Site Address:	<u>2613 S. 11th St.</u>
	<u>Springfield, IL 62702</u>		<u>Rockford, IL 61109</u>
Name:	<u>Brian Conrath</u>		
Phone:	<u>217-557-8155</u>		
Email:	<u>Brian.Conrath@Illinois.gov</u>	d) <b>EPA ID #:</b>	<u>ILD981000417</u>
b) <b>Consultant:</b>	<u>CDM Smith</u>	Name:	<u>John Grabs</u>
Mailing Address:	<u>125 S. Wacker Drive, Suite 600</u>	Phone:	<u>312-780-7737</u>
	<u>Chicago, IL 60606</u>	Fax:	<u>312-346-5228</u>
		Email:	<u>grabsjc@cdmsmith.com</u>

## Spent Carbon Information

2) Carbon Application:

<input type="checkbox"/> Waste Water (WW)	<input type="checkbox"/> Solvent Recovery (SR)	<input type="checkbox"/> Potable Water (PW)	<input type="checkbox"/> SVE (AF)
<input type="checkbox"/> Ground Water (GW)	<input type="checkbox"/> Chem. Processing (CP)	<input type="checkbox"/> Food Processing (FP)	<input type="checkbox"/> Other _____
<input checked="" type="checkbox"/> Water Treatment (WT)	<input type="checkbox"/> Air Filtration (HVAC)	<input type="checkbox"/> VOC Control (AF)	
<input type="checkbox"/> Aqueous	<input type="checkbox"/> Vapor	<input type="checkbox"/> Foreign Material (rock, dirt, sand etc)	

If this is a renewal, provide the existing profile approval number \_\_\_\_\_

- 3) Application Systems Description. Please provide original process details generating constituent (s), (manufacturing, releases etc.) Verify if process /Spent Carbon is considered a listed waste. If not why? If state/federal or other remediation cleanup, please provide historical information. ie..State/EPA records of decision, influent data and or other site historical characterization

IL State Superfund Site impacted by TCA and other VOCs due to a previous site activities associated with a machine shop. Current carbon generated from scrubbing of process water associated with a soil vapor extraction system with electrical-resistivity-heat-accelerator.

4) a.) Carbon type: ☐ Lignite ☐ Coconut ☒ Granular b.) Mesh size: ☐ 8x30 ☒ 4x10 ☐ 4x6  
☐ Coal ☐ Wood ☐ Pellet ☐ 12x40 ☐ 6x16 ☐ Other \_\_\_\_\_  
☐ Impregnat ☐ Powder  
☐ Other approved non carbon sorbents

c.) Annual Usage: 400 lbs d.) System Fill Quantity: 400 lbs e.) Current Volume: 400 lbs

Will reactivated carbon be returned to the generator? ☐ Yes ☒ No

- 5) Handling: ☐ Bulk ☒ Drum ☐ Bulk Bag ☐ Adsorber ☐ Other

## Regulatory Information

- 6) Is the Spent Carbon a RCRA regulated material as per 40 CFR 261 or is the spent carbon a hazardous waste per 25 PA Code 261a? ☐ Yes ☒ No  
If yes, list codes \_\_\_\_\_
- Is the Spent Carbon a State Hazardous Waste? If yes, list waste code (s): ☐ Yes ☒ No  
\_\_\_\_\_
- 7) Does the Spent Carbon treat or contain any of the following: Special Testing Required
- |  |   |  |
|--|---|--|
| A. Polychlorinated Biphenyls (PCBs)                              | <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No |
| B. Dibromochloropropane (DBCP)                                   | <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No |
| C. Dioxins and/or Furans   | <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No |
| D. Pesticides or Herbicides                                      | <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No |
| E. Halogenated Compounds   | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No            |
| F. Sulfur Containing Compounds                                   | <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No |
| G. Cyanide Containing Compounds                                  | <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No |
| H. Radioactive Material/Explosive/Pyrophoric and Shock Sensitive | <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No |
| I. Heavy Metals (Identify, if yes, run total analysis)           | <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No |
| J. Chlorinated Phenols   | <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No |
- Metals** ☐ Arsenic ☐ Antimony ☐ Barium ☐ Beryllium ☐ Chromium ☐ Cadmium ☐ Lead  
☐ Mercury ☐ Selenium ☐ Silver ☐ Thallium ☐ Other \_\_\_\_\_
- 8) a) pH: ☐ <2 ☐ 10.5 – 12.4 b) Flash Point: ☐ <70 ☐ 101-140  
☐ 2 – 4 ☐ >12.5 ☐ 70-100 ☒ > 140  
☒ 4.1 – 10.5
- 9) Foreign material? (if yes please describe or estimate quantity) ☐ Yes ☒ No
- 10) Strong Odor? If yes, please describe ☐ Yes ☒ No
- 11) Is Spent Carbon generated from a Superfund Site ☒ Yes ☐ No Record of Decision (ROD) Required
- 12) Is the Spent Carbon generated from any activity at a chemical manufacturing plant, petroleum refinery or coke by-product recovery plant, i.e., a facility subject to Subpart FF (the Benzene Waste NESHAP)? If yes complete Addendum A ☐ Yes ☒ No
- 13) Is this waste subject to one of the following NESHAP rules:
- a) Hazardous Organic NESHAP (HON) ☐ Yes ☒ No
- b) Pharmaceuticals production (subpart GGG) ☐ Yes ☒ No

## Process Schematic / Sketch

Please provide schematic / sketch of process below or attach to profile.



## Spent Carbon Composition

14)	<b><u>Constituents:</u></b>	<b><u>% by Weight</u></b>	
	Activated Carbon	98	%
	Water (Moisture)	1	%
	Organic Contaminants (list below)	%	Organic Contaminants (list below)
	1		TCA

15) I certify that

BAK

Initials A)

The spent carbon material described in this "Spent Carbon Profile Form" does not contain greater than or equal to 50 PPM polychlorinated biphenyls (PCBs) nor any dibenzo-p-dioxins in concentrations greater than or equal to 20 PPB in 2,3,7,8-TCDD Toxicity Equivalents (TEF) on the Carbon as may be calculated by the application of the most recent Toxicity Equivalency Factors (TEFs) as published by the USEPA;

BAK

Initials B)

The influent to the spent carbon material described in the "Spent Carbon Profile Form" did not contain greater than or equal to 50 PPM of Polychlorinated biphenyls (PCBs). The subject carbon is not regulated under 40 CFR Part 761.

16) **Certification of Documents by Generator**

I hereby certify that all information on this and all attached documents are true and that this information accurately describes the subject spent carbon. I further certify that all samples and analyses submitted are representative of the subject spent carbon in accordance with the procedures established in 40 CFR 261 Appendix I or by using an equivalent method allowed by the PA Department of Environmental Protection. All relevant information regarding known or suspected hazards in the possession of the generator has been disclosed. I authorize Evoqua Water Technologies obtain a sample from any waste shipment for purposes of confirmation or further investigation. If I am a consultant signing on behalf of the generator, I have their proper approval.

Official: Brian A. Conrath Title: Remedial Project Manager

Signature: Brian A. Conrath Date: 04 Apr 2017



April 10, 2017

**Customer Mailing Address:**

Brian Conrath  
IEPA  
1021 N. Grand Avenue East  
Springfield, IL. 62702  
Phone: (217) 557-8155

**Site Address:**

Southeast Rockford Area 4  
2613 South 11th street  
Rockford, IL 61109

**Generator Mailing Address:**

IEPA  
1021 N. Grand Avenue East  
Springfield, IL 62702  
217-557-8155  
EPA Number: ILD981000417

**RE Non-Hazardous Approval Notification  
SCID/PROFILE: EWT-IEPSIL-WT**

*Evoqua Water Technologies LLC hereby gives notice that the above mentioned SCID/PROFILE has been approved for acceptance and has all the necessary permits and licenses for the waste that has been characterized and identified by the profile:*

**PAD987270725 (Darlington) RCRA Hazardous Waste Storage and Thermal Treatment Permit**

**Waste Codes:** NONE

**Effective Dates of Approval:** 4/21/2017 - 4/21/2018

**Approved for Plant:** DARLINGTON

**May Be Received/Shipped:** 4/21/2017

**Carbon Type:** Granular

**Carbon Mesh Size:** 4X10

**Approved Handling Methods:** Drums -

**BP11:** OK

**Approval No: (SCID/PROFILE)** EWT-IEPSIL-WT

We request that this number is used in all future correspondence pertaining to this spent carbon.

**Documents required for each shipment:**

Non-Hazardous Shipping Documents and Labels

**Please contact your local or inside sales representative to schedule shipment. At least 48 hours is required before shipment to secure a dock time.**

Please call the Environmental Health & Safety Department (724-827-8181 x570) if you have any questions.

Thank you,

Bill Bailey  
Department of Environmental Affairs

WINNEBAGO

LANDFILL  
COMPANY

ROCKFORD, IL

## SPECIAL WASTE PROFILE SHEET AND CERTIFICATION

Treatment Method (Check One): ☒ Solidification☐ Direct Landfill

## A) Generator Information

Generator Name

IEPA

(Correspondence will be sent to "Billing Name" address)

Street

1021 N. Grand Ave. East

City

Springfield

State

IL

Zip

62702

Contact Name

Brian Conrath

Phone

217-557-8155

Fax

State ID#

2010300074

NAICS (SIC) Code

562910

Billing Name

TRS Group, Inc.

Street

P.O. Box 737

City

Longview

State

WA

Zip

98632

Contact Name

Fred Morris

Phone

360-560-7551

Fax

## B) Waste Description

1) Waste Name:

Process water from soil-remediating ERH system

2) Process Generating

Condensing steam into water.

Waste:

3) Is this waste a characteristic or listed hazardous waste as defined in CFR 40 Part 261?

Yes

☒ No

4) Method of Shipment:

☐ Rolloff☒ Tanker☐ Str. Truck / Semi

Other:

4a) Container Type:

5) Frequency of shipment:

☒ One Time☐ Monthly☐ Annually☐ Other:

5a) Estimated Volume: 3,000 gallons

6) Waste is:

☐ Industrial Process Waste☐ Pollution Control Waste☐ UST or Spill Related Waste☒ Unused or Off-Spec Product

Other, please specify:

Water from condensing steam at ERH remediation site.

7) Analysis attached?

☒ Yes☐ No

Comment:

8) MSDS attached?

☐ Yes☒ No

Comment:

## C) Physical Data

1) Color:

white/cloudy

4) Free Liquids?

☒ Yes☐ No

2) Odor:

☐ None☒ Mild☐ Strong

5) Flash Point:

&lt;100°F

100-139°F

140-200°F

☒ >200°F

3) # of Layers:

Liquid

99%

6) pH:

&lt;2

2.1-3.9

☒ 4-10

10.1-12.5

☐ >12.5

Solids

%

Sludge

1%

7) Specific Gravity:

&lt;1

1-1

&gt;1.6

## D) Waste Composition

liquid/water

99+

%

hydrocarbons

&lt;1

%

## E) Sample Information

☐ N/A

Date Collected:

3/8/17

Sampled by:

B. Morris

Grab or Composite  
(circle)

I hereby certify, to the best of my knowledge and belief, the sample collected and analyzed is representative of the waste to be managed. If a Material Safety Data Sheet (MSDS) is provided, I hereby certify, to the best of my knowledge and belief, that it is representative of the waste to be managed.

BM Initial



## F) Chemical Constituents

Based on analysis, provide an actual value for total constituents or TCLP concentration in ppm (mg/kg or mg/l).

### INORGANIC CONCENTRATIONS

D004	Arsenic	5.0	ND
D005	Barium	100.0	ND
D006	Cadmium	1.0	ND
D007	Chromium	5.0	ND

D008	Lead	5.0	ND
D009	Mercury	0.2	0.00057
D010	Selenium	1.0	ND
D011	Silver	5.0	ND

### ORGANIC CONCENTRATIONS

D018	Benzene	0.5	ND
D019	Carbon Tetrachloride	0.5	ND
D021	Chlorobenzene	100.0	ND
D022	Chloroform	6.0	ND
D023	o-Cresol	200.0	ND
D024	m-Cresol	200.0	ND
D025	p-Cresol	200.0	ND
D026	Cresol	200.0	ND
D027	1,4-Dichlorobenzene	7.5	ND
D028	1,2-Dichloroethane	0.5	ND
D029	1,1-Dichloroethylene	0.7	ND
D030	2,4-Dinitrotoluene	0.13	ND

D032	Hexachlorobenzene	0.13	ND
D033	Hexachlorobutadiene	0.5	ND
D034	Hexachloroethane	3.0	ND
D035	Methyl Ethyl Ketone	200.0	ND
D036	Nitrobenzene	2.0	ND
D037	Pentachlorophenol	100.0	ND
D038	Pyridine	5.0	ND
D039	Tetrachloroethylene	0.5	ND
D040	Trichloroethylene	0.7	ND
D041	2,4,5-Trichlorophenol	400.0	ND
D042	2,4,6-Trichlorophenol	2.0	ND
D043	Vinyl Chloride	0.2	ND

## G) Non-Hazardous Waste Certification

I hereby certify that the waste identified in this profile does not contain or has not come into contact with any hazardous waste listed in 40 CFR 261.30 – 261.33 and 35 Ill. Adm. Code 721.130 – 721.133 and is non-hazardous according to 40 CFR 261.1 – 261.20 and 35 Ill. Adm. Code 721.101 – 721.133.

I hereby agree to hold Winnebago Landfill Company harmless from any cost, damages or other liability resulting from the breach of this warranty.

Generator's Initials BAC

## H) RCRA Pesticide/Herbicide Certification

I hereby certify that none of the following RCRA pesticides or herbicides listed below were used in the generation processes involved in the production of the waste identified in this profile and, to the best of my knowledge and belief, the waste does not contain hazardous concentrations of these substances.

*Chlordane, Endrin, Heptachlor and its epoxide, Lindane, Methoxychlor, Toxaphene, 2,4-D and 2,4,5-TP Silvex*

Generator's Initials BAC

## I) PCB/Waste Solvents Certification

I hereby certify that no polychlorinated biphenyls (PCBs) or RCRA F-Listed waste solvents were used in the generation processes involved in the production of the waste identified above and, to the best of my knowledge and belief, the waste does not contain hazardous concentrations of these substances.

I hereby agree to hold Winnebago Landfill Company harmless from any cost, damages or other liability resulting from the breach of this warranty.

Generator's Initials BAC

## J) Cyanide/Sulfide Certification

For wastes containing greater than 10 ppm reactive cyanide or reactive sulfide, I hereby certify that none of the following has occurred:

1. The waste has caused injury to a worker because of H<sub>2</sub>S or HCN generation;
2. The OSHA work place air concentration limits for H<sub>2</sub>S or HCN have been exceeded in areas where the waste is generated, stored or otherwise handled; and
3. Air concentrations of H<sub>2</sub>S or HCN have been encountered above a few ppm in areas where the waste is generated, stored or otherwise handled.

Generator's Initials \_\_\_\_\_

### GENERATOR CERTIFICATION

I, Brian A. Conrath

hereby certify that the above and attached documentation is complete and accurate to the best of my knowledge and ability. No deliberate or willful omissions of composition or properties exist and that all known or suspected hazards have been disclosed. I also certify that the waste stream is, to the best of my knowledge, non-hazardous and as such does not contain any constituent that would cause the waste to be a listed or characteristic waste under RCRA.

Signature Brian A. Conrath Title Project Manager Date 30 Mar 2017

Office Use Only:

Profile # \_\_\_\_\_

## **Appendix B**

## City of Rockford, Illinois

Public Works Department  
Engineering Division  
425 East State Street, Rockford, IL 61104  
Phone: 779-348-7174 Fax: (815) 967-7058  
Web: [www.rockfordil.gov](http://www.rockfordil.gov)

RECEIVED MAR 11 2016



W-00

BOND  
received 3/23/16

## RIGHT-OF-WAY PERMIT APPLICATION

(Permit applies but is not limited to the following activities within the City right-of-way: tunnel, bore, excavate, dig, lane closures, sidewalk closures etc.)

3 / 11 / 16  
(DATE OF APPLICATION)

PERMIT FEE : \$35.00

(FEE WAIVED FOR PUBLIC UTILITIES)

TKS GROW INC

(APPLICANT NAME - PLEASE PRINT)

☐ UTILITY ☒ CONTRACTOR ☐ CONSULTANT ☐ PROPERTY OWNER  
(APPLICANT IS - CHECK ONE BOX)

(IF BUILT BY A CONTRACTOR GIVE NAME &amp; ATTACH PROOF OF BOND AND INSURANCE)

(CONTRACTOR ADDRESS - PLEASE PRINT)

PO Box 737 Logview, WA 98032  
(APPLICANT ADDRESS)

(ADDRESS)

847-376-3691  
(PHONE)847-635-5868  
(FAX)

(PHONE)

(FAX)

Digging of 14 wells into Marshall St. then trench pipe & cables to the wells  
(DESCRIPTION OF WORK - EXAMPLES: BURY 125' OF 4" GAS MAIN; ACCESS MANHOLE; INSTALL SEWER/WATER SERVICE; LANE CLOSURE; ETC.)

2630 MARSHALL ST

(LOCATION OF WORK - STREET NUMBER &amp; STREET NAME)

Harrison + Alton

(WORK IS LOCATED BETWEEN THESE TWO CROSS STREETS)

5/16

THRU

6/10

7 a.m. - 6 p.m.  
(REQUESTED DATES FOR WORK)
☒ PAVEMENT ☐ ALLEY ☐ SIDEWALK ☐ TERRACE ☐ CURB
IF IN PAVEMENT WHAT TYPE: ☐ CONCRETE ☒ ASPHALT ☐ BRICKARE ANY PAVEMENT CUTS REQUIRED? ☒ YES ☐ NOIF YES IS LOCATION ON 5 YEAR ROAD MORATORIUM? ☒ YES ☐ NO

(NOTE: IF PAVEMENT CUT IS AUTHORIZED AT LOCATION LISTED ON 5 YEAR ROAD MORATORIUM, FULL LANE RESTORATION WILL BE REQUIRED.)

The above applicant requests permission to excavate and/or occupy the public right-of-way in the City of Rockford and agrees to indemnify, hold harmless, and defend the City of Rockford, its officers, agents, and employees, from any and all claims resulting from injuries, including death, damages or losses, including, but not limited to the general public, which may arise or which may be alleged to have arisen out of, or in connection with such excavation and occupancy. I hereby agree to perform the work in accordance with the provisions, specifications and requirements of all of the following:

- Chapter 26, as revised, of the City of Rockford, Code of Ordinance.
- IDOT's Standard Specifications for Road and Bridge Construction, as revised.
- The Standard Specifications for Water and Sewer Construction in Illinois, as revised.
- Traffic control shall always be provided by the applicant or contractor and will be in accordance with the Illinois Manual on Uniform Traffic Control Devices for Streets and Highways, as revised. A traffic control plan and standard details may be required based on the Engineer's or designee's discretion. 48 hours notice is required for closures.
- Accessibility requirements shall be in accordance with the Illinois Accessibility Code and a current IDOT Standard shall be submitted with the application when applicable.
- Erosion & sediment control shall be in accordance with all requirements set forth in the current revision of the General NPDES Permit No. ILR10. Stabilization measures must be initiated within seven (7) days after construction activities have temporarily or permanently ceased.
- All other federal, state, and local requirements as they may apply.

## THE FOLLOWING ITEMS ARE TO BE SUBMITTED WITH THE APPLICATION:

- CERTIFICATE OF INSURANCE - \$3,000,000 per occurrence, City of Rockford listed as additional insured, and valid through the permit period.
- CERTIFICATE OF BOND - \$50,000 limit, acceptable forms are Right-of-Way and License & Permit, City of Rockford listed as Obligor, and valid through the permit period.
- PROJECT DESCRIPTION - including site plan / drawings and schedule for all activities taking place in the public right-of-way including dimensions of pavement cuts.
- TRAFFIC CONTROL PLAN - Any closure of streets or sidewalks shall require a traffic control plan to be submitted.

(AUTHORIZED REPRESENTATIVE SIGNATURE)

(AUTHORIZED REPRESENTATIVE PRINTED NAME)

## FOR INTERNAL USE ONLY

APPROVED BY:

APPROVAL  
DATE:

START DATE:

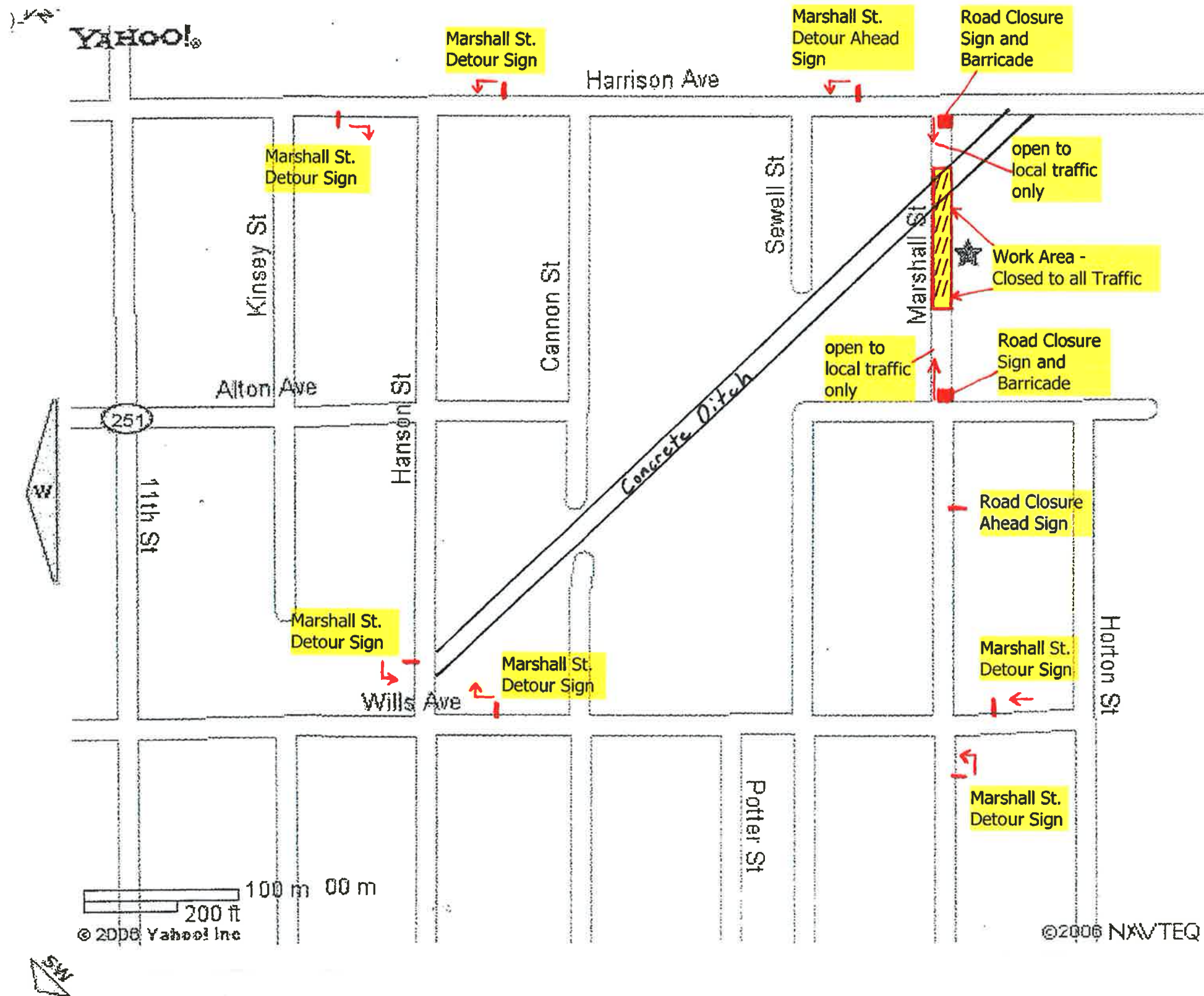
PERMIT FEE:

EXPIRES:

PERMIT #:

(PAY CODE - 10101000-61403)

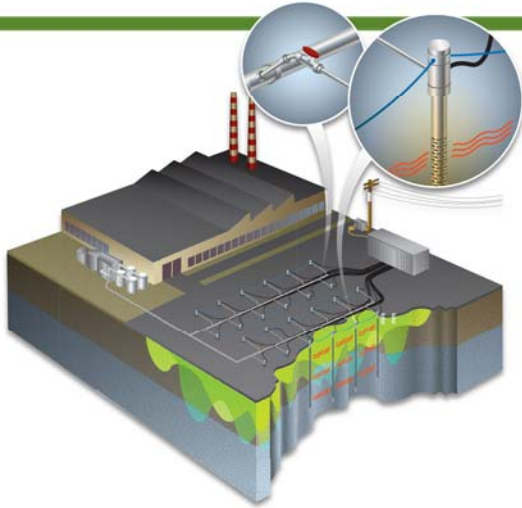




**Marshall Street Closure Traffic Plan**

## Soil Testing Report

# Soil Testing Report



## **Southeast Rockford Groundwater Contamination Superfund Site Area 4 Rockford, IL**

DATE

February 2, 2016

Submitted to:

**CDM Smith**



**TRS**  
TRS Group, Inc.  
*Accelerating Value*

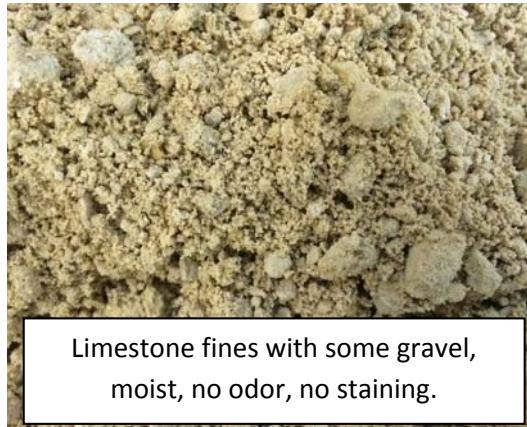


P.O. Box 737  
Longview, WA 98632  
[www.thermalrs.com](http://www.thermalrs.com)

## Soil Testing Report Rockford, Illinois Site

On January 12, 2016, TRS Group (TRS) collected a continuous soil sample to 36 feet below grade at a location near former soil boring GP-13 in the center portion of Zone 2 of the Electrical Resistance Heating (ERH) treatment area. This is the location of the site where the highest concentrations of 1,1,1-trichloroethane (TCA) have been historically observed and also where low-density non-aqueous phase liquids (LNAPL) have been previously observed. Sampling was performed by Terra Probe Environmental of Ottawa Lake, Michigan. The soil sample was collected using a direct push rig (Geoprobe 6620 Rig) with a dual-tube 21 sampler system. The rig was used to collect 9 core samples, each 4-feet in length. Each core sample was collected in 1-3/8" diameter PVC sleeves. The ends of the samples were immediately capped after sample collection. A water sample was collected from the boring location by pushing a 1-inch temporary PVC well with 5-feet of 10-slot screen interval. The screen remained in the borehole for 20 minutes to allow any mobile LNAPL at the surface of the water table to penetrate into the well. A peristaltic pump was then used to evacuate the accumulated fluids from the well screen. Although several attempts were made during purging of the well to identify and collect NAPL, none was observed. After sample collection was completed, the borehole was closed using fine bentonite chips as the backfill material. The soil and groundwater samples were transported from Rockford, Illinois to Sylvania, Ohio by Terra Probe Environmental. Descriptions and photographs of the soils from each core sample are provided below.

**Figure 1: 0' – 4' Soil Sample**



**Figure 2: 4' – 8' Soil Sample**





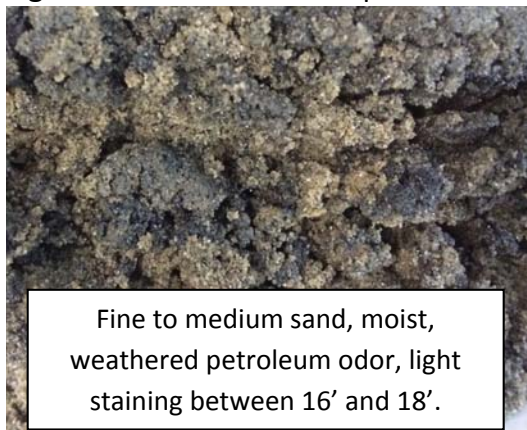
**Figure 3: 8' – 12' Soil Sample**



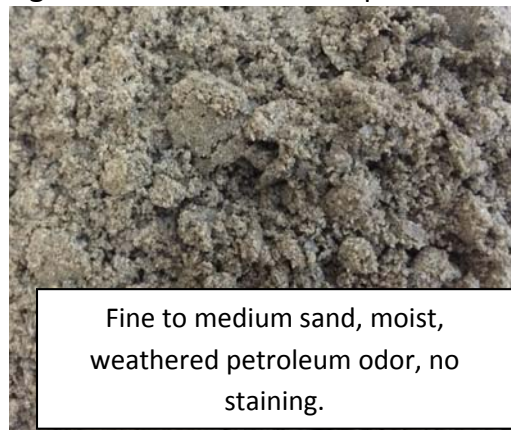
**Figure 4: 12' – 16' Soil Sample**



**Figure 5: 16' – 20' Soil Sample**



**Figure 6: 20' – 24' Soil Sample**



**Figure 7: 24' – 28' Soil Sample**



**Figure 8: 28' – 32' Soil Sample**



**Figure 9: 32' – 36' Soil Sample**



### SOIL TESTING

The two soil samples with the strongest odor (12'-16' and 28'-32') were selected for individual testing of percent moisture (modified ASTM D2216), wet and dry density (modified ASTM D4380), calculated porosity, sieve analysis (ASTM D422) and gas chromatograph fingerprinting. The result of the moisture, density and porosity testing for the samples are summarized in Table 1 below.

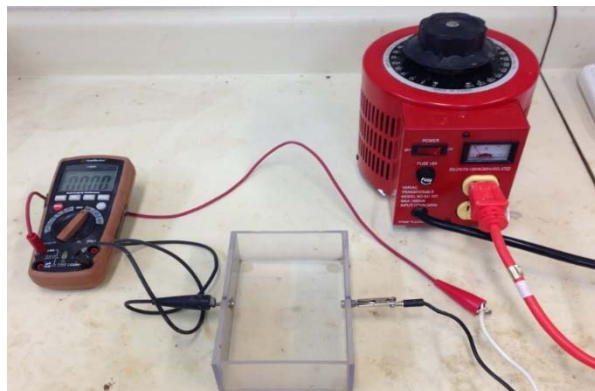
**Table 1:** Physical Characteristics of Soil

Parameter	12' - 16' Sample	32' - 36' Sample
Percent Moisture	10.3%	10.3%
Wet Density	1.82 g/cc	1.84 g/cc
Dry Density	1.63 g/cc	1.65 g/cc
Porosity	38.5%	37.7%

The density, moisture and porosity data are all within expected ranges for this project design.



A sample from each of the soil cores was also subjected to resistivity testing using the two-electrode soil box method outlined in ASTM G187-12a. The apparatus for this testing is shown on the following page in Figure 10.

**Figure 10:** Two-Electrode Soil Box



The resistivity of the soil samples tested by ASTM G187-12a ranged between approximately 23 and 47 ohm-meters (ohm-m). These values are consistent with values expected for moist sand. The values also match up well with the 34 ohm-m value that TRS used in the preliminary design for this project. A summary of the resistivity data are summarized below in Table 2.

**Table 2:** Soil Resistivity Values

**TRs**  
*Accelerating Value*

**G187 – 12a**

### Soil Resistivity Test using the Two-Electrode Soil Box Method

Test Date: 1/13/16

A/d (cm) = 2.1

Sample Description	Sample Temperature (°C)	Voltage	Amps	Measured Resistance (Ω)	Calculated Resistivity (Ω-m)
0' - 4'	6	130	0.09	1444	31.0
4' - 8'	6	130	0.08	1625	34.8
8' - 12'	6	130	0.07	1857	39.8
12' - 16'	6	130	0.12	1083	23.2
16' - 20'	6	130	0.06	2167	46.5
20' - 24'	6	130	0.06	2167	46.5
24' - 28'	6	130	0.08	1625	34.8
28' - 32'	6	130	0.12	1083	23.2
32' - 36'	6	130	0.07	1857	39.8

The most important thing to note in reference to the resistivity data is that lowest resistivity values were observed for the two soil samples with the strongest weathered petroleum odors. Historically the TCA has been observed co-mingled with the petroleum impacts. The low soil resistivity correlates to higher electrical conductivities, therefore the electrical current will preferentially flow at a slightly higher rate through the most impacted soils, thus resulting in targeted cleanup of these most-impacted soil intervals.

## **SIEVE ANALYSIS**

Sieve analyses were performed on soil samples from the 12' – 16' depth interval and also from the 28' – 32' soil interval using Method ASTM D 422. Results of the analysis are included in Appendix A. The test results show that the soils located between 12 and 16 feet below grade consisted primarily of sand in the particle size range of 0.1 to 1 mm diameter, thus classifying the sand as a fine to medium sand with 90% of the sand being fine. The particle size of the sand appeared to gradually increase with depth. The test results for the soil sample collected from 28 to 32 feet showed that the particle sizes ranged from about 0.25 to 2 mm in diameter. The soil sample was still classified as a fine to medium sand but only 27% of the sand was classified as fine with most of remainder being medium sand.

## **ESTIMATED HYDRAULIC CONDUCTIVITY**

The hydraulic conductivity of sandy soil can be estimated from the grain-size distribution curve using the Hazen method. The method is applicable to sands where the grain size falls within the range of 0.1 to 3.0 mm in diameter. The sieve analyses for this project show that the majority of sand particles for both the upper and lower sand unit fall within this range. The Hazen approximation method uses a constant (C) that is assigned a value based on the observed grain size of the sand. For the fine to medium sand observed at this project, the value of C would be approximately 100 (Fetter, 1988). The hydraulic conductivity as determined by the Hazen method is determined by the following formula:

$$K = C(D_{10})^2$$

where

K = hydraulic conductivity (cm/sec)

D<sub>10</sub> = Effective sand diameter at the 10% line on the grain size curve (cm)

C = sand coefficient (100)

The D<sub>10</sub> values for the 12' to 16' sample and the 32' to 36' sample are 0.017 cm and 0.030 cm, respectively. The estimated hydraulic conductivity of the 2 sand samples are therefore calculated to be  $2.9 \times 10^{-2}$  cm/sec for the shallower sand sample and  $9.0 \times 10^{-2}$  cm/sec for the deeper sand sample. These values are of the same order of magnitude to the value of  $5.3 \times 10^{-2}$  cm/sec reported in the project request for proposal (RFP).

## **GROUNDWATER CONDUCTIVITY**

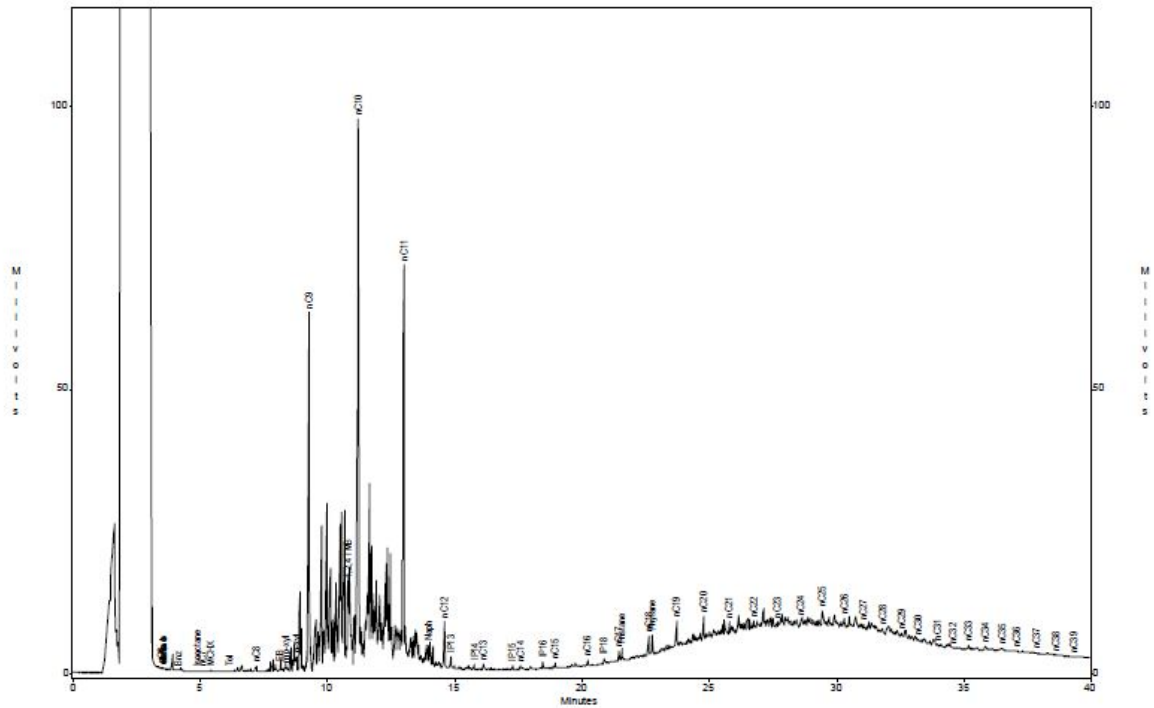
The groundwater collected from the temporary monitoring well had a strong weathered petroleum odor but no sheen or NAPL was observed in the sample. The sample was tested for specific conductivity with an Oakton ECTestr11 conductivity probe. The specific conductivity of the water sample was 1,320 uS/cm. This correlates well with prior site data and it closely matches the value used in the preliminary design.

## **HYDROCARBON FINGERPRINTING**

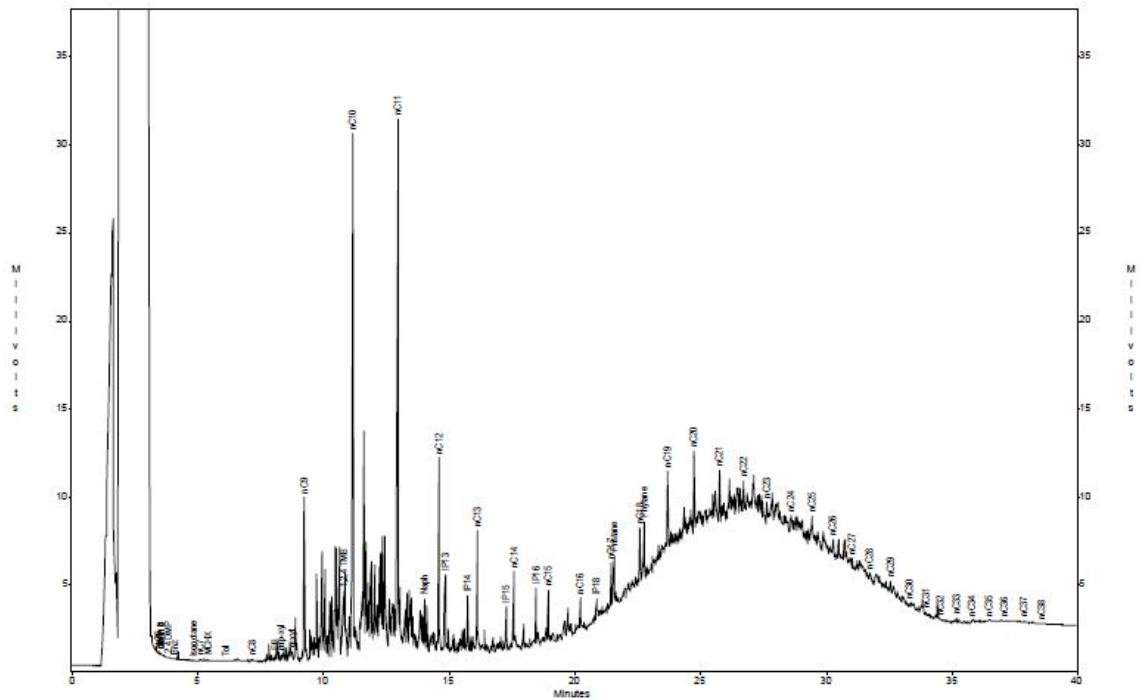
Soil samples from the 12'-16' interval and the 28'-32' interval were shipped to Torkelson Geochemistry, Inc. in Tulsa, Oklahoma for fingerprint analyses by gas chromatography. The Site groundwater sample was also shipped for fingerprint analysis. The purpose was to identify the typical range of hydrocarbons in the subsurface in order to understand how they would perform to ERH. The chromatograms are shown below in Figures 11 through 13.



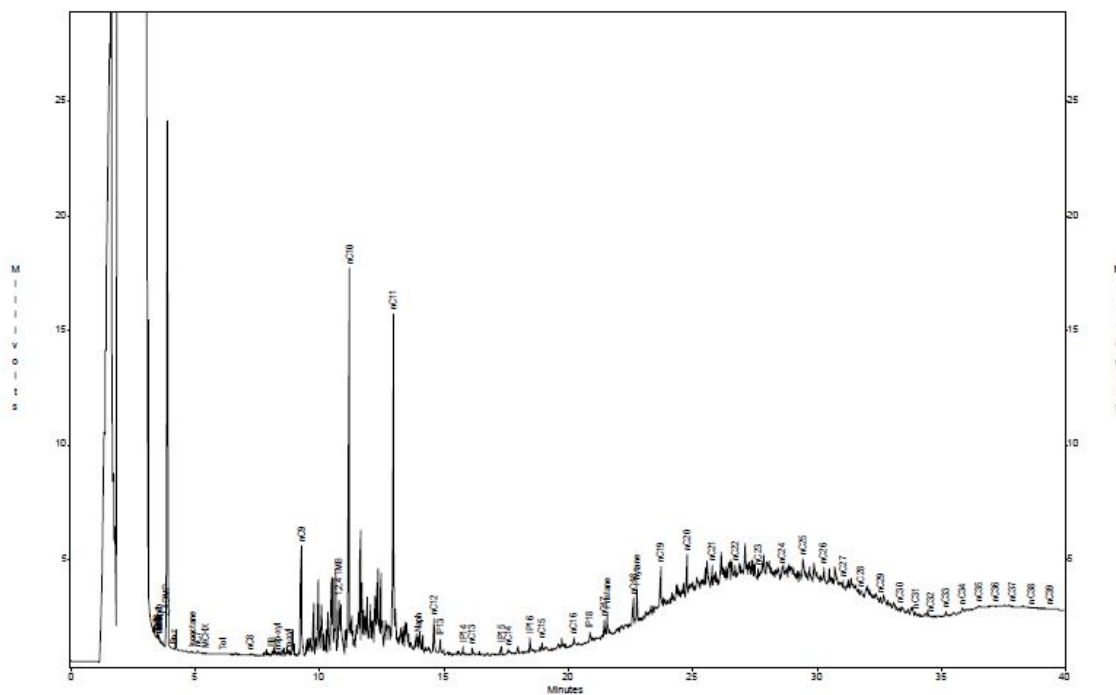
**Figure 11:** Fingerprint Analysis for 12'-16' Soil Sample



**Figure 12:** Fingerprint Analysis for 28' -32' Soil Sample



**Figure 13:** Fingerprint Analysis for Site Water Sample



Note that in each sample there are 2 very distinct petroleum hydrocarbon patterns. Between the 10 and 15 minute retention time there are a series of peaks that represent the C8 to C12 hydrocarbon range that is characteristic of gasoline. The lack of peaks in the early portion of the chromatogram indicate that the gasoline has been highly weathered over time.

A second pattern of peaks is between the 20 and 35 minute retention time. This series of peaks represents hydrocarbons in the C20 to C32 range and are representative of a typical pattern observed for lubricating oils. The intensity of the peaks shows that the lubricating oil is more prevalent at the deeper depth interval than the shallow depth interval.

## CONCLUSIONS

TRS could not collect a sample of NAPL for testing from the subsurface because mobile NAPL was not present in the soils or temporary monitoring well installed in the source area. However, fingerprint analysis for the soils and groundwater at that location showed that the hydrocarbon impacts consist of 2 distinct hydrocarbon profiles. A portion of the hydrocarbon is weathered gasoline (estimated to be 25% of the total hydrocarbon mass based on peak area) and the remainder falls into the typical range of a lubricating oil (estimated to make up 75% of the hydrocarbon mass based on peak area). The gasoline-range compounds are readily volatilized during ERH. However, the lubricating oil will have a boiling point in the range of 300 to 500 °C and will have low volatility. Based on these data, TRS proposes to make no changes in the preliminary

electrode design submitted with the RFP as multiphase extraction (MPE) electrodes will be beneficial in recovering lubricating oils under reduced viscosity conditions during heating.

Samples of site soil were collected by a direct push rig and the soil samples were subjected to testing by sieve analysis, density, porosity and electrical resistivity. These data were compared to the data provided in the RFP to determine if any changes were required in refining the ERH model. The data correlate well with data provided in the RFP and support the design submitted with the RFP. Based on the results of the soil testing report, TRS believes the design can be finalized using the preliminary design and assumptions submitted with our proposal.

## TRS Weekly Reports





**TRS**  
Accelerating Value

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November 4, 2016

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**Subject: ERH Construction/Start-up Report  
June 27, 2016 to October 31, 2016  
Southeast Rockford Groundwater Contamination Site Area 4  
2630 Marshall Street, Rockford, Illinois.**

Dear Mr. Conrath,

This letter report contains a brief description of the Electrical Resistance Heating (ERH) remediation system construction, start-up, and initial operations performed at 2630 Marshall Street, Rockford, Illinois (the Site). The time period addressed in this report is from June 27, 2016, through October 31, 2016.

## **Background**

The ERH treatment volume is located at 2630 Marshall Street in what is known as Source Area 4 and is one of four known source areas that are part of the Southeast Rockford Groundwater Contamination Superfund Site. Area 4 is situated in a mixed industrial, commercial, and residential area of Rockford, Illinois, located east of Marshall Street and south of Harrison Ave. Area 4 is comprised of a building and an associated parking lot that formerly housed a machine shop. Per previous Site investigations, elevated concentrations of 1,1,1-trichloroethane (TCA) and other volatile organic compounds (VOCs) were detected in soil below the former loading dock area and in downgradient groundwater monitoring wells.

Initially, an *ex situ* thermal remediation through excavation and onsite low-temperature thermal desorption (LTTD) was determined to be the appropriate remedy for the contaminated soils impacting the groundwater. However, after evaluating the challenges and cost of excavating and stockpiling soil on the small site, it was determined that employing ERH provides a preferred method for remediating the contaminated soil. Electrodes were installed inside and outside the building without significant complications. Each of the 39 electrodes was installed vertically using traditional drilling techniques.

Since 2004, CDM Smith (CDM) has conducted several pre-design investigations that have included the collection of soil and groundwater samples. Contamination at the Site consists of contaminated soil with heavy staining and a light non-aqueous phase liquid (LNAPL) layer at the top of the aquifer. Based on the horizontal and vertical profile of the contamination and site characteristics, the contamination is divided into three zones.

- Zone 1 consists of soil contamination and LNAPL below a portion of the building that is a high-bay garage. Significant contamination generally exists between 12 and 37 feet below ground surface (bgs), but is closer to the building foundation on the northern end of the

garage. It is believed that some waste was deposited in this area prior to construction of the garage.

- Zone 2 consists of soil contamination and LNAPL in the former loading dock area. Contamination was originally encountered between 0.5 and 37 feet bgs, but the area was subsequently excavated down to 3 feet bgs. The excavated area was lined with plastic sheeting and backfilled with clean gravel. It is believed that this is the primary location where waste was deposited. Several photos of the contaminated soil in this zone are included in Exhibit A.
- Zone 3 consists of the area below the parking lot where significant contamination and LNAPL exists in approximately the top 10 feet of the aquifer. The transition between Zone 2 and Zone 3 is very abrupt indicating the waste deposited in Zone 2 essentially travelled downward until it encountered the water table and then migrated into Zone 3.

## **System Construction**

Subsurface installation of the ERH system began on June 27, 2016. A private utility locate was conducted by the TRS Group, Inc.'s (TRS) locating subcontractor, Blood Hound Underground Utility Locators (Blood Hound). Ground penetrating radar (GPR) was used to scan over each boring location in the treatment area. The utility inspection did not identify any below grade issues within the treatment area outside of a few utility lines that had since been abandoned. Blood Hound did identify some utilities in the active roadway (Marshall Street) in front of the Site. These included the public water and gas mains, a storm sewer, as well as infrastructure associated with the Bodine Environmental Services, Inc. (Bodine) groundwater extraction system. Once the subsurface location services were completed, TRS began the installation of 39 electrodes, seven (7) temperature monitoring points (TMPs), eight (8) vapor piezometers, and eight (8) groundwater piezometers on Tuesday July 5, 2016. Drilling work inside the building was conducted by Terra Probe Environmental (Terra Probe) and the drilling work conducted outside of the building was conducted by K&S Engineering (K&S). The drilling work was completed on August 29, 2014.

Due to the nature of the soil formation, the electrodes were drilled with hollow stem augers and built inside of the augers. Each of the 39 electrodes was made up of a 4-inch steel pipe and was designed to additionally function as vapor recovery (VR) with large portions of the electrode being slotted as well screen. Additionally, a 1-inch copper entrainment tube was installed within the electrode and connected to the VR conveyance piping to pull LNAPL from the electrode VR wells during the operational phase of the remediation. All electrodes, except for the nine installed in Marshall Street, were completed above grade and were electrically insulated with the use of an electrode oversleeve. All VR piping, electrode supply cable, and water addition piping were run through the oversleeve to their appropriate connection place within the oversleeve. The nine electrodes installed in Marshall Street were completed below grade, with all conveyance piping, electrical conductors, and instrumentation cable routed in subsurface trenches. All conveyance piping, electrical conductors, and instrumentation cable transitioned to the ground surface in the parking lot of the building.

Asphalt saw cutting of the network of trenches within Marshall Street began on August 29, 2016, after the street had been completely closed with the use of signage and temporary fencing. All of the street work was performed under the City of Rockford permit number ROW20161344. TRS contracted Diamond Cut Concrete Cutters (Diamond Cut) to saw cut a 30-inch wide cut in the asphalt connecting each electrode location as well as a cut down to Bodine's water treatment vault. The trenching was run primarily in a north to south orientation with one leg of the trench heading in an east to west direction south of Bodine's groundwater extraction well EW3. TRS elected to run the trenching in this manner to avoid a potential encounter with any of Bodine's pre-existing extraction

well infrastructure. TRS carefully removed the asphalt from the street and staged it aside for future recycling. The trench was then excavated to 26 inches bgs so that TRS could install the required electrode supply cable, VR piping, vapor piezometer piping, groundwater piezometer conduit, water addition piping, temperature monitoring point (TMP) cable, and water discharge line to Bodine's treatment vault. The water discharge line was pressure tested in accordance with the work plan prior to burial and the test confirmed that no leaks were present. All excavated soil was placed into roll off containers and disposed of at Rock River Landfill following soil sample analysis. The trenches were backfilled with a controlled density fill to approximately 4 inches below grade. The top 4 inches of the trench were filled with concrete and were completed on the afternoon of Thursday, September 8, 2016. Marshall Street was reopened to normal traffic patterns on Friday, September 9, 2016.

Surface installation began on August 22, 2016, with TRS working behind the drillers to complete the construction of the surface components in a timely manner. The surface installation activities included:

- Construction of electrode wetting system manifold;
- Vapor recovery manifold construction;
- Wiring of equipment and gauges, wiring of TMP and drip field boxes, and electrode supply cable connection.

Throughout the course of the system construction, TRS conducted the successful placement of each piece of the ERH process equipment. This included the ERH power control unit (PCU), condenser/cooling tower, 20-ft storage box, 40-horsepower (hp) vacuum blower, and two auto-transformers.

The first piece of equipment to arrive was the 20-ft storage box on June 29, 2016, with the final pieces of equipment (the PCU, 40-hp blower, and condenser/cooling tower) arriving on August 22, 2016. To protect the TRS equipment and materials, as well as maintain public safety during system operation, a 6-foot tall chain link fence with privacy screen was installed around the ERH treatment area and process equipment compound. A large 16-foot gate was installed to provide access to equipment for operational activities such as granular activated carbon (GAC) change-outs when needed. The fence installation was completed on August 12, 2016. The surface installation was successfully completed on October 5, 2016. The electrodes, TMPs, equipment, and other Site features are shown in **Figure 1**.

A security system was installed along the fence line and surrounds the equipment compound and electrode areas. The system consists of five motion-detecting sensors. If the sensors detect movement within the coverage area, the PCU contactor will open and discontinue electrical power application to the treatment volume. TRS is notified by an automated telephone call in the event of interruption to the applied power. In addition to the motion-detecting sensors, the system consists of nine motion activated cameras. If the cameras detect movement, they record a ten second video that is immediately e-mailed to both TRS and a third-party security dispatch center. If the video is determined to depict an unauthorized entry, the local police are contacted and dispatched to the Site. The Site also has an overhead 360-degree camera so that the equipment compound can be observed. The camera is running in real time and can be accessed from off-site locations. The camera system installation, security system installation, and programming were completed on October 11, 2016.

A 13,000-pound vapor phase granular activated carbon (VGAC) vessel that is divided into two separate chambers (acting as two vessels) was delivered to the Site on October 12, 2016. It was installed on the effluent side of the vapor recovery blower in series (primary and secondary chamber).

## System Startup Activities

System startup and optimization began on October 5, 2016. This phase of the work consisted of energizing the condenser/heat exchanger, cooling tower, vacuum blower, temperature monitoring points, water addition control systems, and groundwater piezometer monitoring. This was followed up with functionality testing of the ERH equipment and interlocks and the evaluation of subsurface energy application.

The condenser was filled with water from the building's potable water source and operations were initiated. Items inspected included leak checks, functionality (hand/off/auto switches, float switches, valves), and the ability to maintain normal operations. The inspection of the system also verified the proper operational parameters (flow, differential pressures, and applied field vacuum) on each gauge and valve. Once proper operations of the components were confirmed, ERH equipment interlock testing commenced. Testing of the ERH equipment interlocks was completed on October 6, 2016, and it was confirmed that each interlock performed as designed.

TRS initiated electrical energy application to the treatment volume, via the electrodes, on October 6, 2016. The purpose of this testing was to evaluate the electrical characteristics of the treatment volume. This evaluation included:

- observations of cable/electrode amperages;
- applied voltages to the electrodes; and,
- an overall evaluation of the energy applied to the treatment volume.

Concurrent with the ERH system testing, step-and-touch voltage safety tests were performed. This test was done to evaluate surface conditions for the presence of induced voltages. Areas where personnel may walk or surfaces could be touched were measured for voltage potentials.

The step-and-touch voltage testing identified that there were a few locations that exceeded the TRS 10-volt standard within the fenced area. The locations that contained exceedances of the 10-volt standard were a few of the water addition solenoids and some of the electrode grout seals in Zones 1 and 2. TRS mitigated the issue by insulating the affected valves with pipe insulation, eliminating the ability for an individual to come into contact with the valve. Subsequent surveys in wet and dry conditions confirmed that there were no other voltages exceeding the 10-volt limit within the fenced area. TRS has a 5-volt standard in public areas that fall outside of the installed perimeter fence. TRS measured voltages on the trench concrete seal on Marshall Street that exceeded the 5-volt limit in wet conditions. Although TRS has reduced the voltage considerably with the use of rubberized paint, there still remains a need to further mitigate the issue and, as a result, the nine electrodes in the street remain offline. With the electrodes in the street offline, the site was established as electrically safe and cleared for uninterrupted operations. The first day of uninterrupted operations was October 14, 2016.



## ERH Application Summary

The ERH system operational parameters for the start-up period through October 31, 2016, are presented below in **Table 1**.

**Table 1. Key ERH System Operational Parameters**

<b>ERH System Parameters</b>	<b>October 31</b>	<b>October 14</b>
Weekly Average Power (kW)	489	0
Cumulative Energy Applied (kWh)	195,280	0
Average Subsurface Temperature (°C)	46.9	15.0
Average Vapor System Flow Rate (scfm)	813	860
Duration of System Shutdown (approximate hours)	6	0

The ERH system operated without interruption, except for one unscheduled shutdown, during the reporting period. The unscheduled shutdown occurred on the morning of Monday, October 31, 2016, at approximately 6:00 a.m. and was the result of a high-water level alarm in the ERH condenser that resulted from a shutdown in the Site groundwater extraction and treatment system (GETS). TRS worked with Bodine to clear the alarm condition and the system was restarted at approximately 12:00 p.m. Aside from the one unscheduled shutdown, the PCU and the VR and vapor abatement system have operated within design parameters during the reporting period.

### Temperatures

The average subsurface temperature in the treatment area increased from 15.0 degrees Celsius (°C) to 46.9 °C during the reporting period. The highest individual temperature measurement within the treatment volume was 98.9°C. This was recorded at TMP location M5, at 27-feet bgs.

Temperatures relative to depth for each TMP are presented in **Figures 2a** through **2g**. To adequately illustrate the temperature change, the data was broken into seven separate graphs based on the TMP location. Average subsurface temperature over time is presented in **Figure 3**.

### Power and Energy

The PCU averaged 489 kilowatts (kW) of applied power to the treatment volume during the reporting period. A total of 195,280 kilowatt-hours (kWh) of energy have been applied to the subsurface as of October 31, 2016.

## ERH Vapor Recovery and Piezometers

During this reporting period, the average vacuum applied to the subsurface was approximately 4.7 inches of mercury (in Hg). The vapor stream flow rate, as measured after the VR blower, averaged 860 standard cubic feet per minute (scfm). TRS collects vapor piezometer readings at least once a week while onsite to illustrate full vacuum influence across the Site. The readings from the reporting period are presented in **Table 2**.

**Table 2. Site VP Readings, October 24, 2016**

VP	Vacuum ("wc)	VP	Vacuum ("wc)
B4	1.5	K5	6.5
C2	1.5	L4	2.5
D4	3.5	L7	3.0
G4	5.5	M6	3.0

In addition to the vapor piezometer readings, TRS also collects groundwater piezometer readings daily through automated data collection. The groundwater piezometer readings are presented graphically in **Figures 4a** through **4d**. Note that the readings from GWP G5 are errant however TRS has recently corrected the problem and the new readings will be incorporated into the next report. TRS noted the odd trend during start-up and took manual readings to determine that the automated readings were in fact incorrect. TRS continues to assess the function of the groundwater piezometer. As the readings show, there is fluctuation within the piezometer, it is consistent change from inside and outside the treatment volume. Regardless, TRS has started dual vacuum extraction (DVE) at approximately 75 percent of the electrodes.

## Planned Activities

TRS personnel will visit the Site the week of November 7, 2016, to collect operations data, optimize the system, and perform weekly maintenance.

Should you have any questions concerning this report, or if you would like any additional information, please contact either me or Chris Thomas by phone at (360) 560-7551 and (847) 376-3691, respectively.

Sincerely,  
TRS Group, Inc.



Bradley Morris  
Assistant Project Manager

Attachments: Figure 1 – Site Plan  
Figure 2a – TMP D3 Temperature vs. Depth  
Figure 2b – TMP F4 Temperature vs. Depth

Figure 2c – TMP H3 Temperature vs. Depth  
Figure 2d – TMP K4 Temperature vs. Depth  
Figure 2e – TMP K5 Temperature vs. Depth  
Figure 2f – TMP K7 Temperature vs. Depth  
Figure 2g – TMP M5 Temperature vs. Depth  
Figure 3 – Subsurface Temperatures vs. Time  
Figure 4a – GWP B4 and C3  
Figure 4b – GWP E3 and F3  
Figure 4c – GWP G5 and H6  
Figure 4d – GWP K3 and L4

cc/att: Chris Thomas, TRS  
Tim Warner, TRS

## **Attachments**



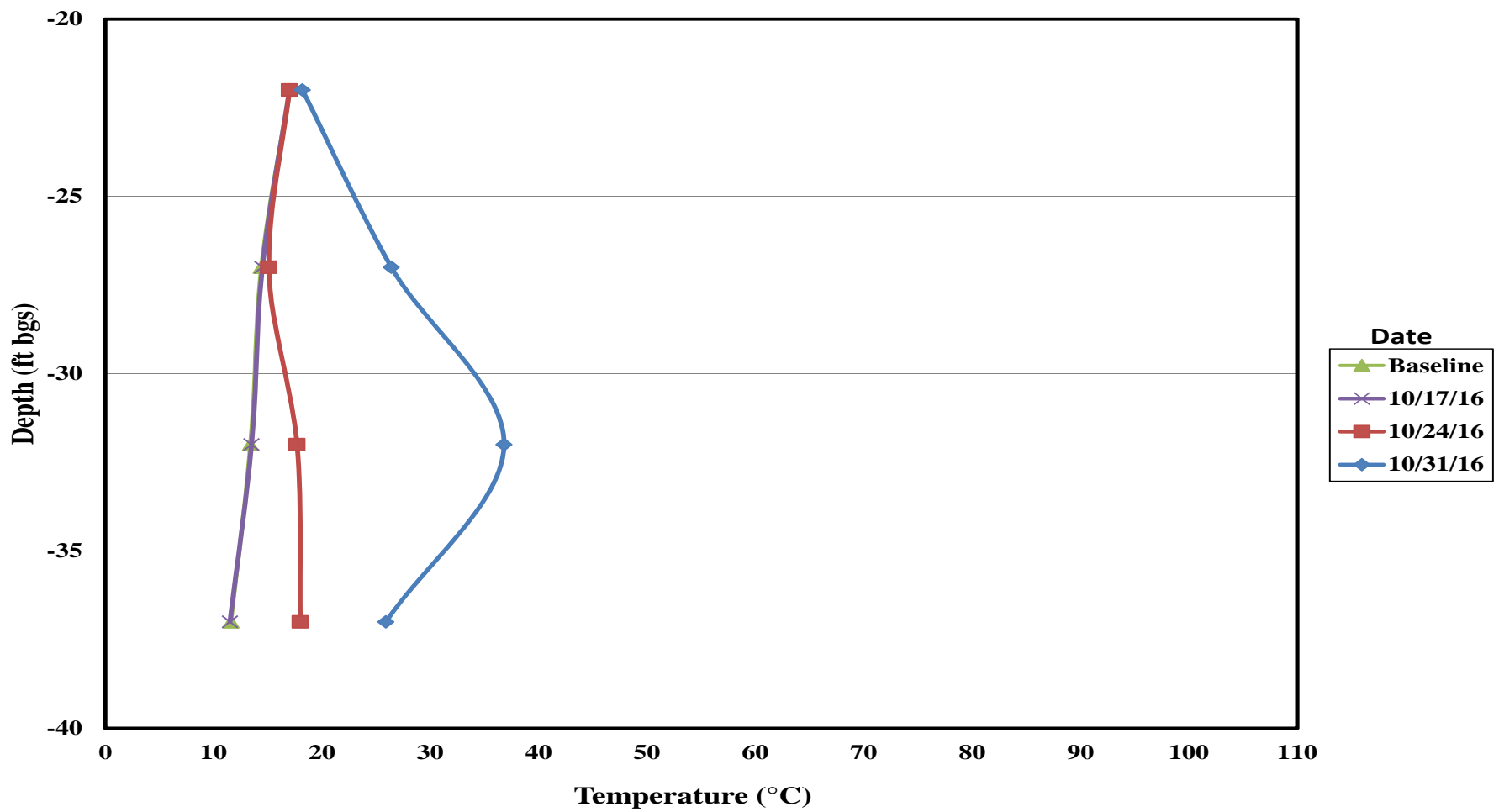
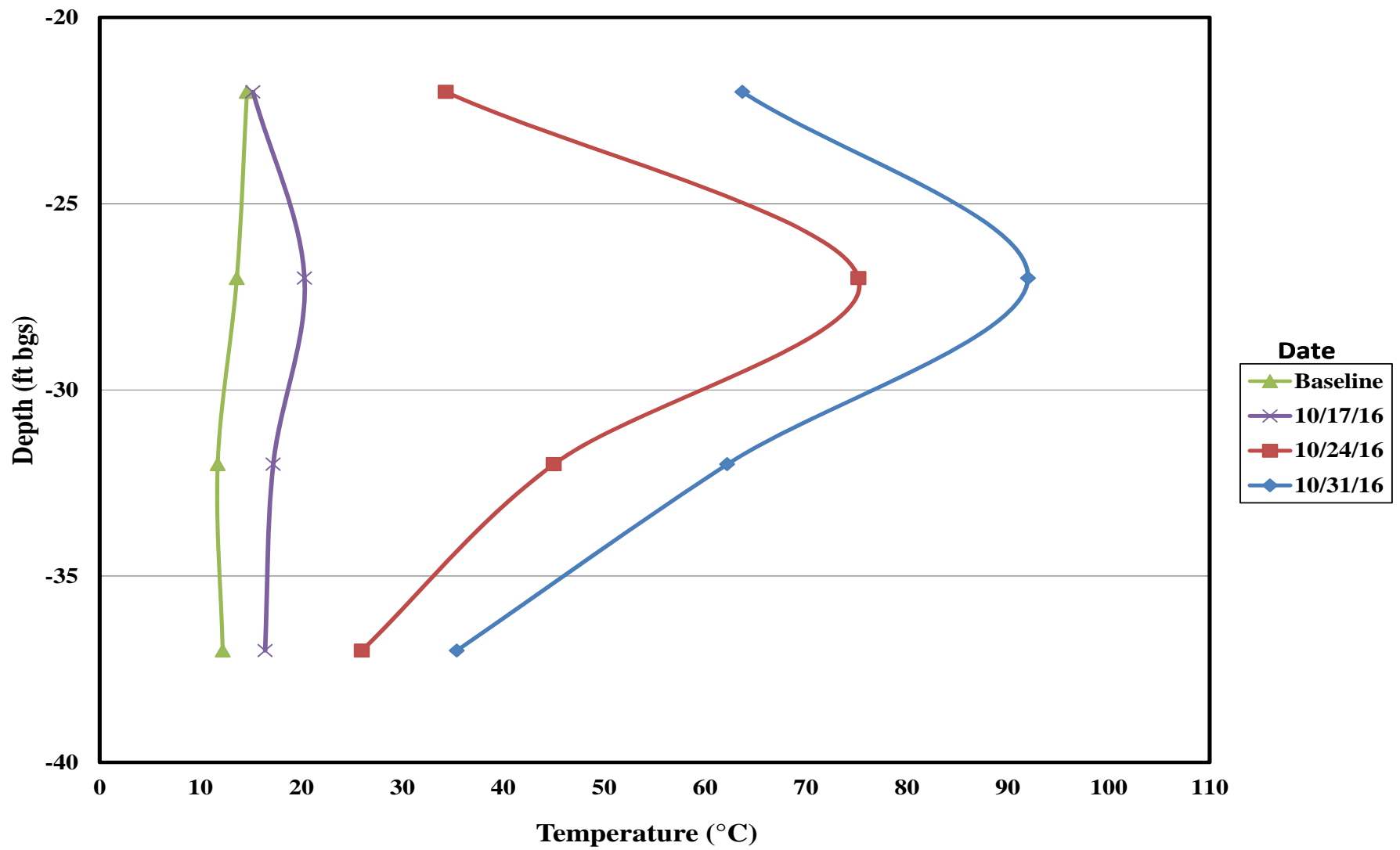
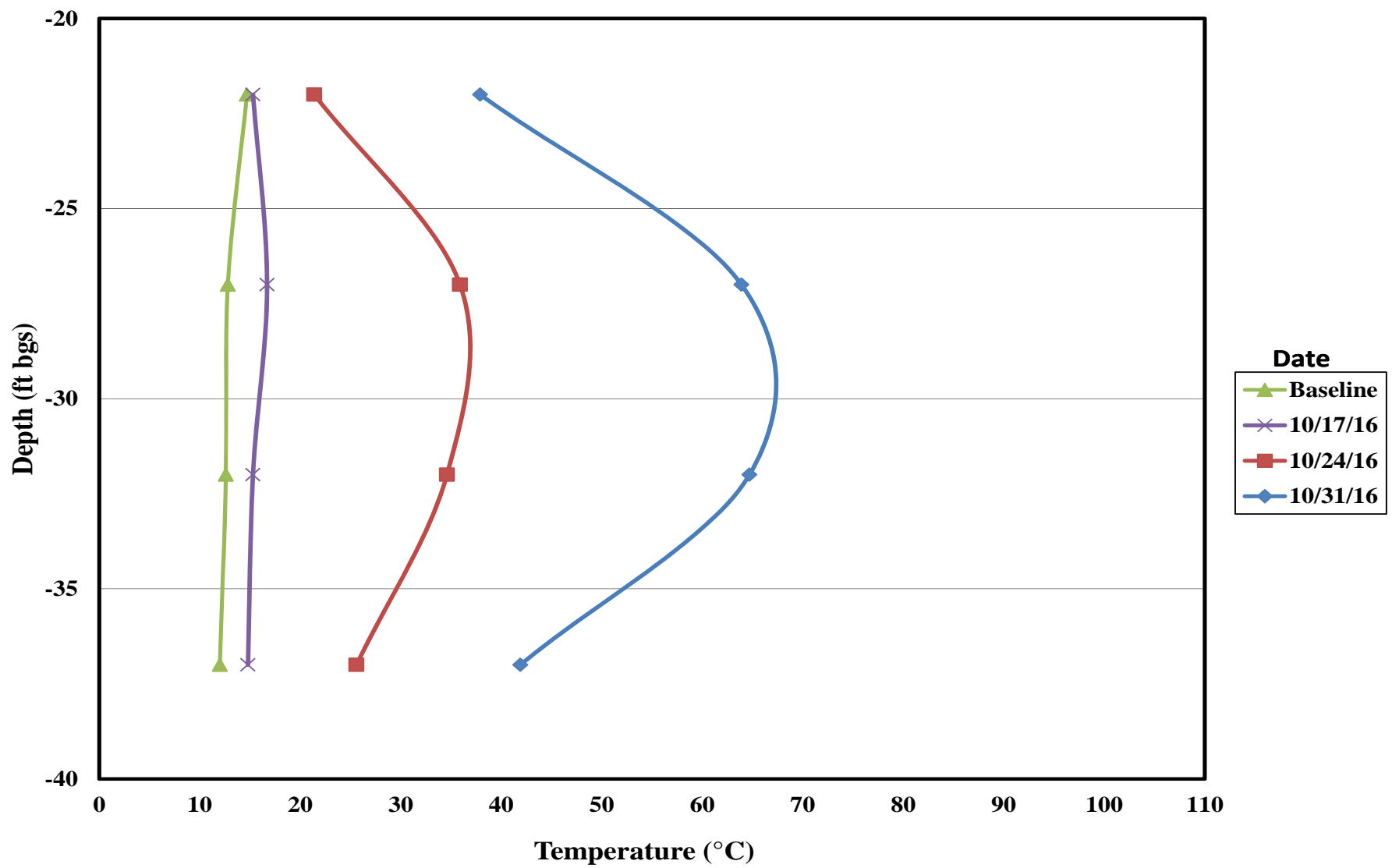


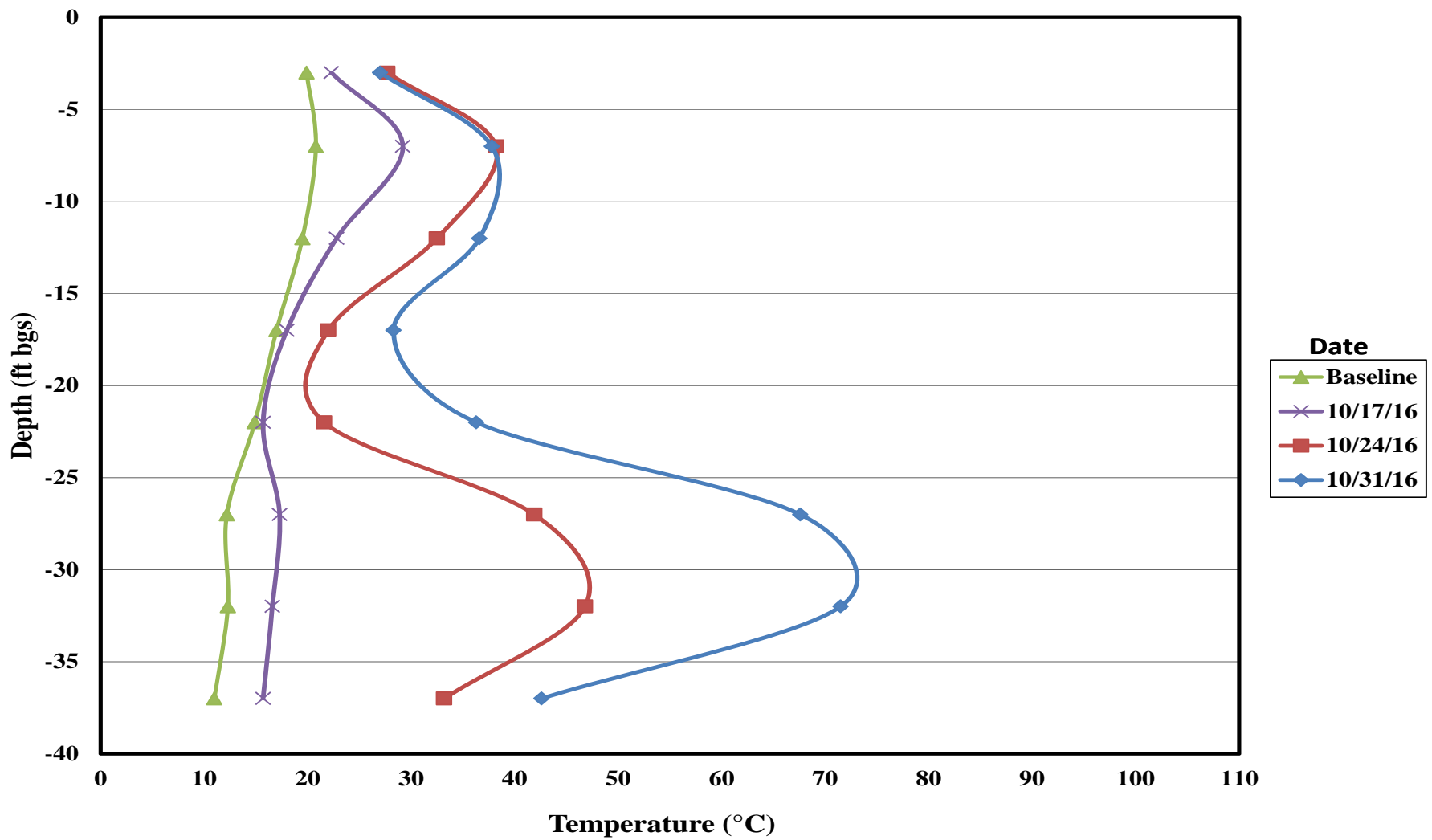
Figure 2a. TMP D3 Temperature vs. Depth



**Figure 2b.** TMP F4 Temperature vs. Depth



**Figure 2c.** TMP H3 Temperature vs. Depth



**Figure 2d.** TMP K4 Temperature vs. Depth



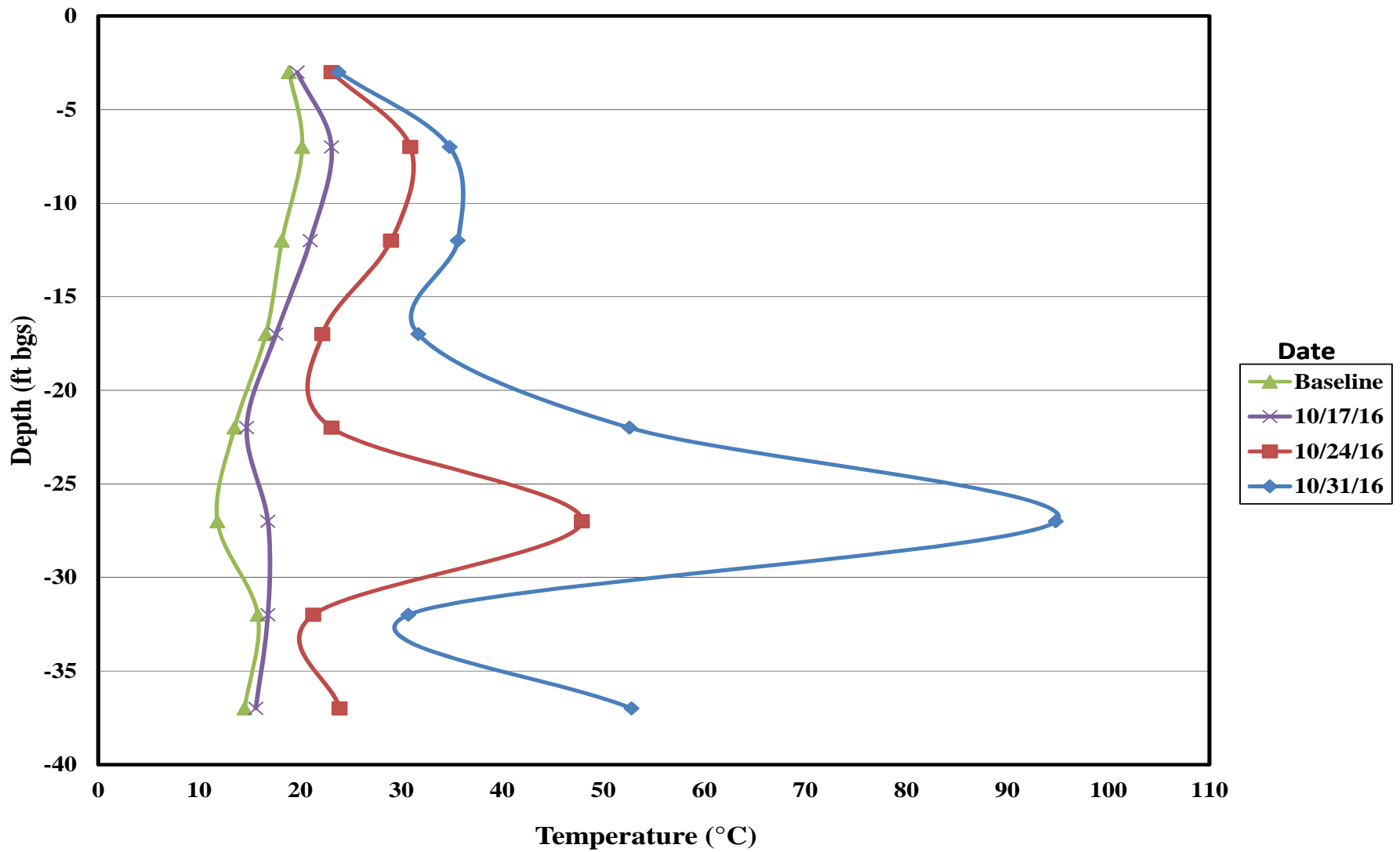
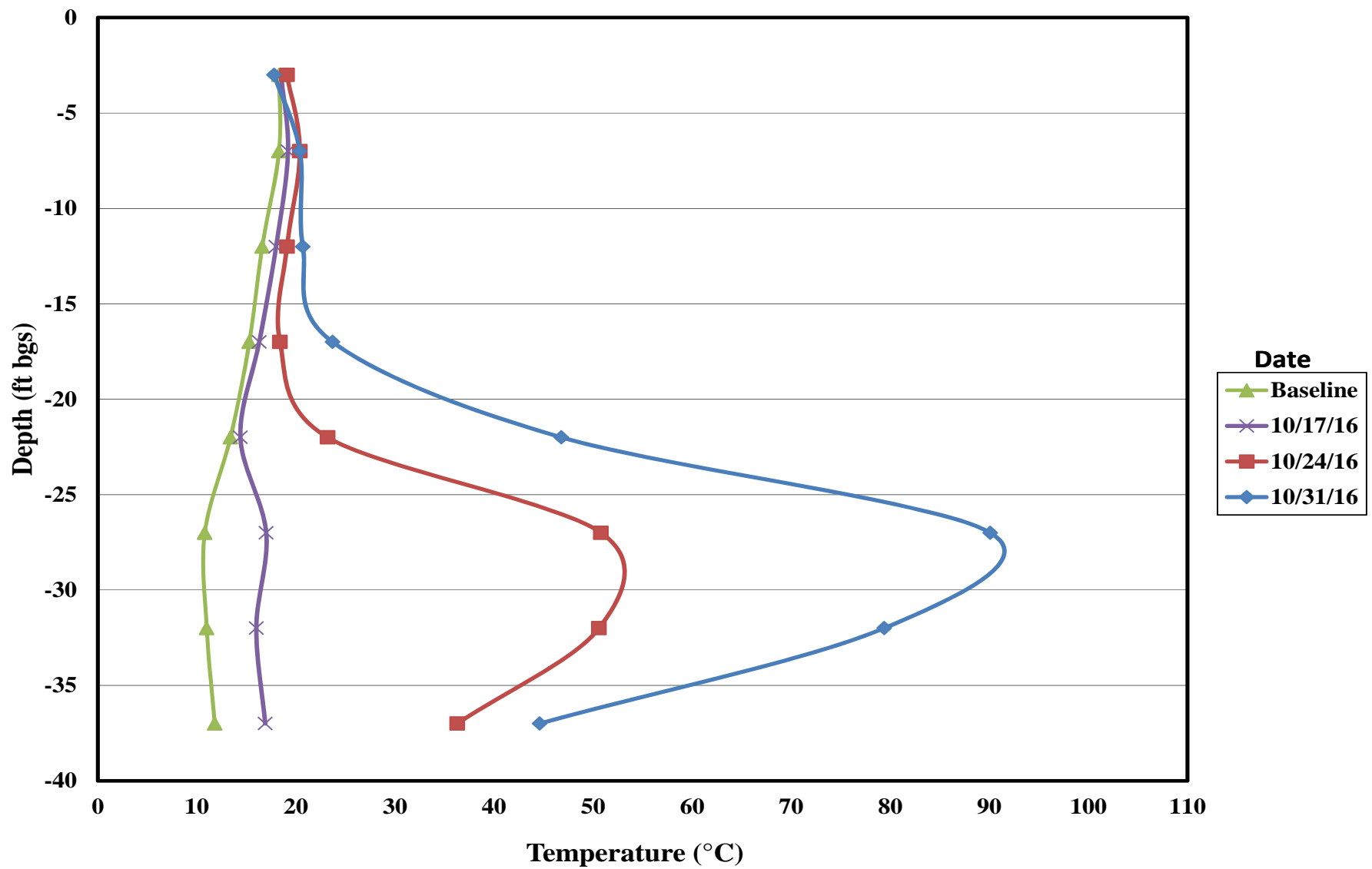


Figure 2e. TMP K5 Temperature vs. Depth



**Figure 2f.** TMP K7 Temperature vs. Depth

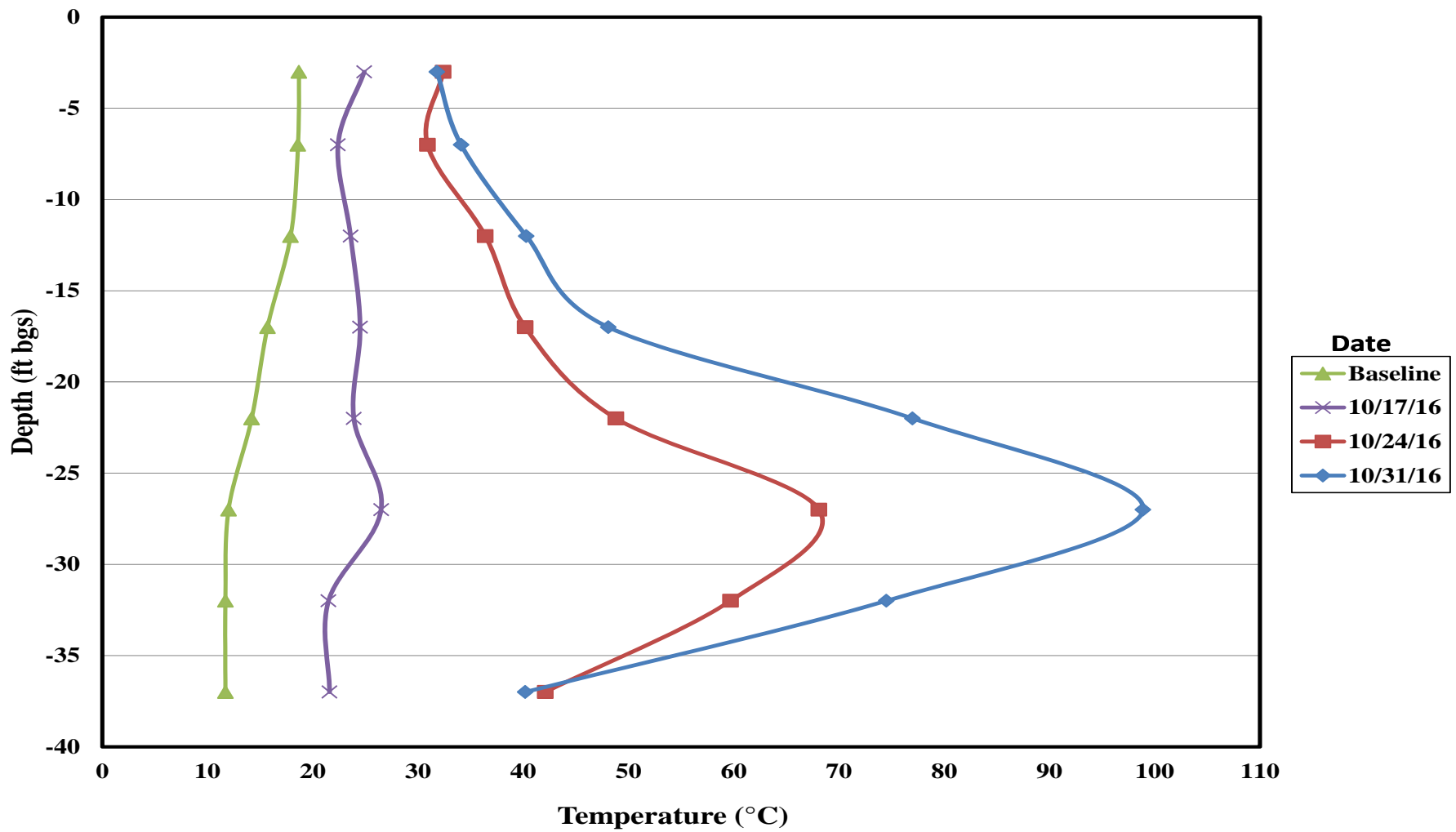
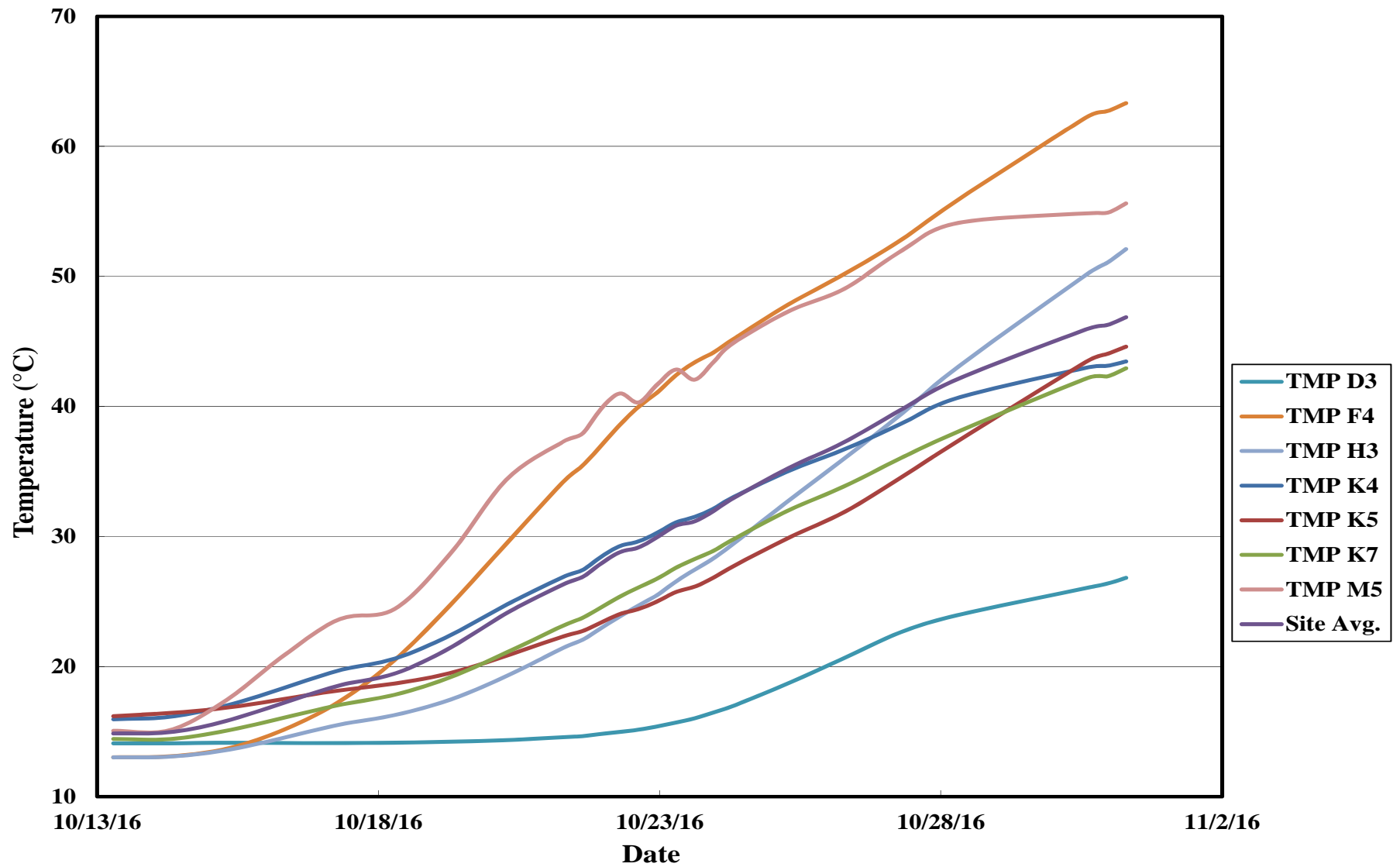
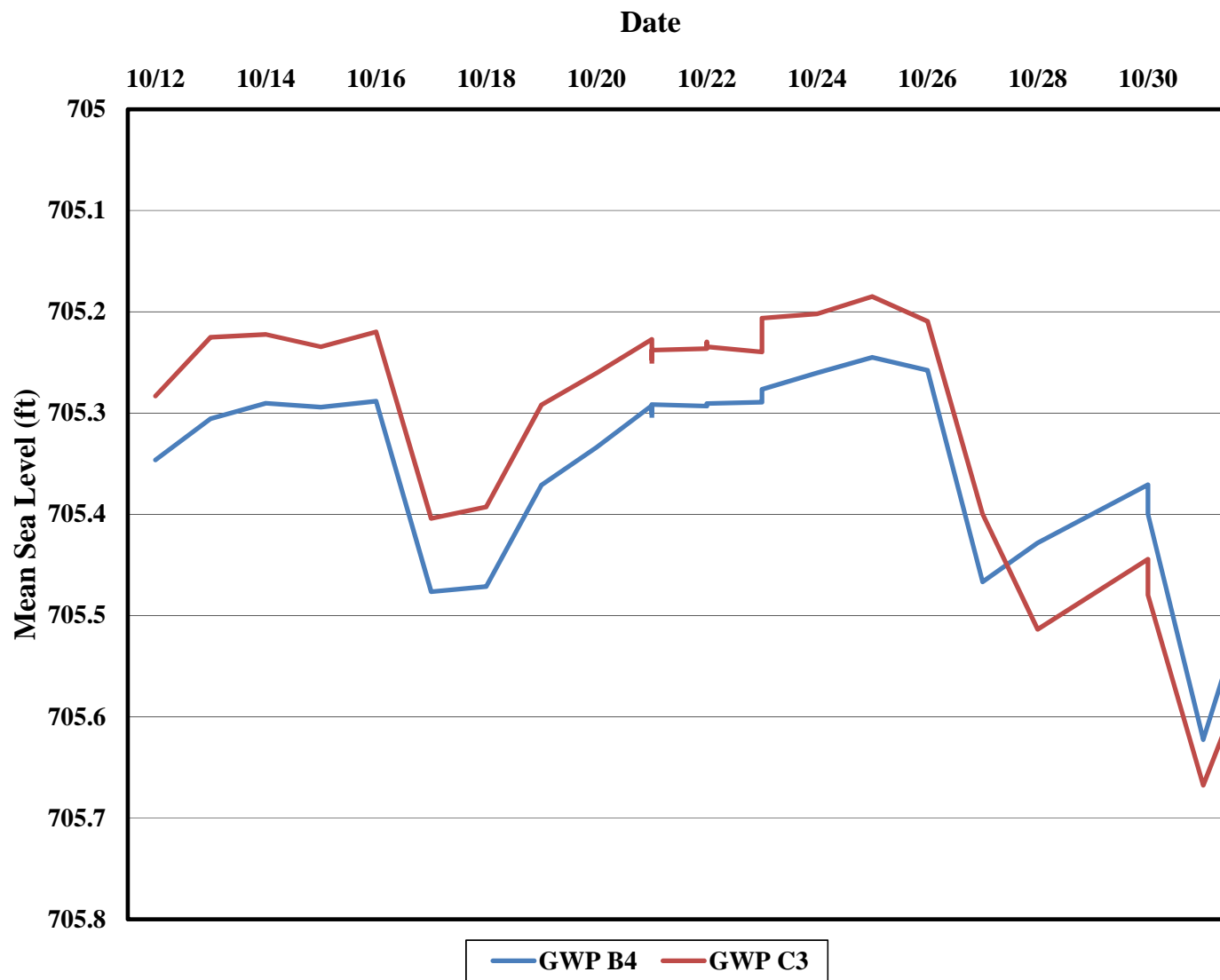


Figure 2g. TMP M5 Temperature vs. Depth

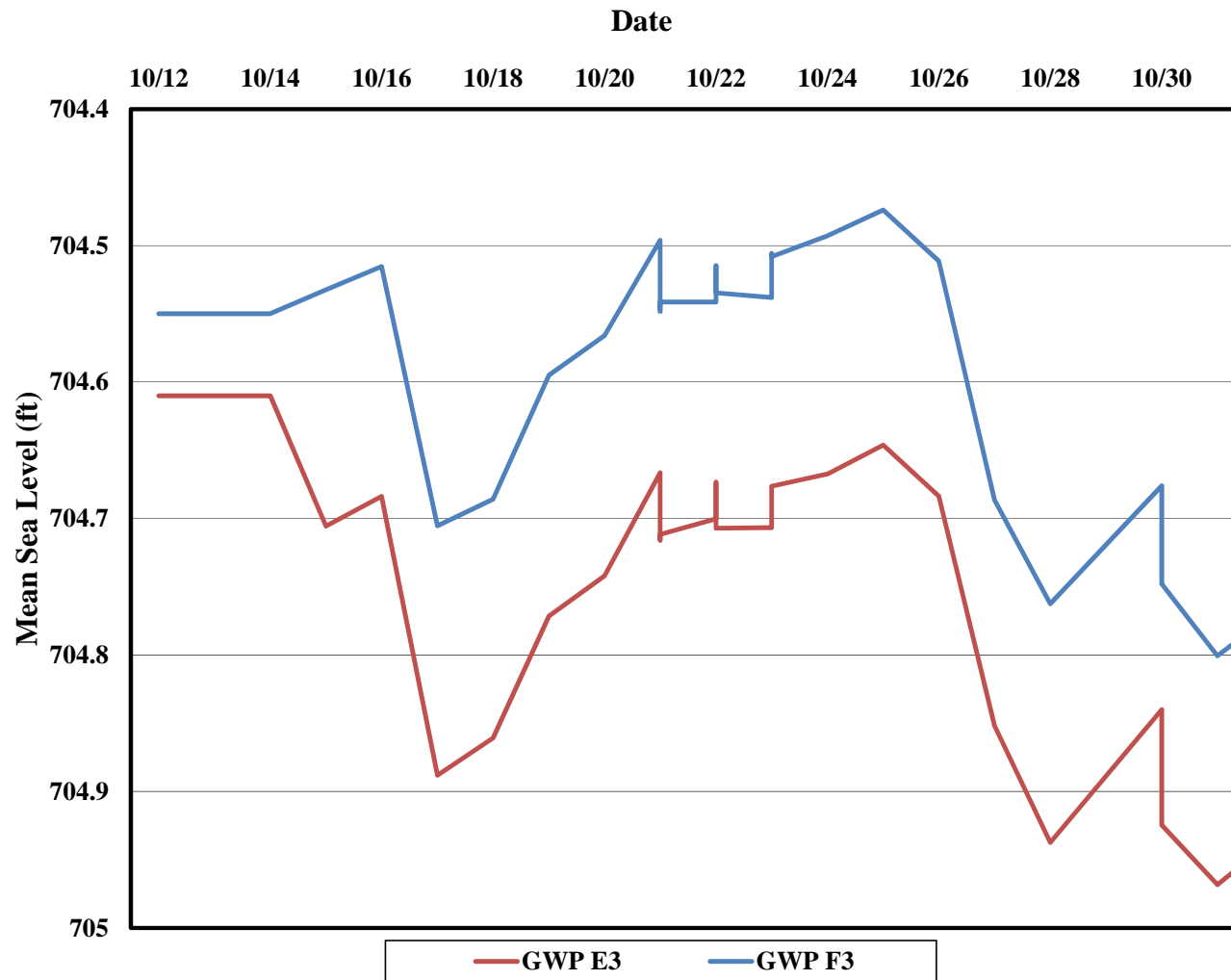


**Figure 3.** Subsurface Temperatures vs. Time

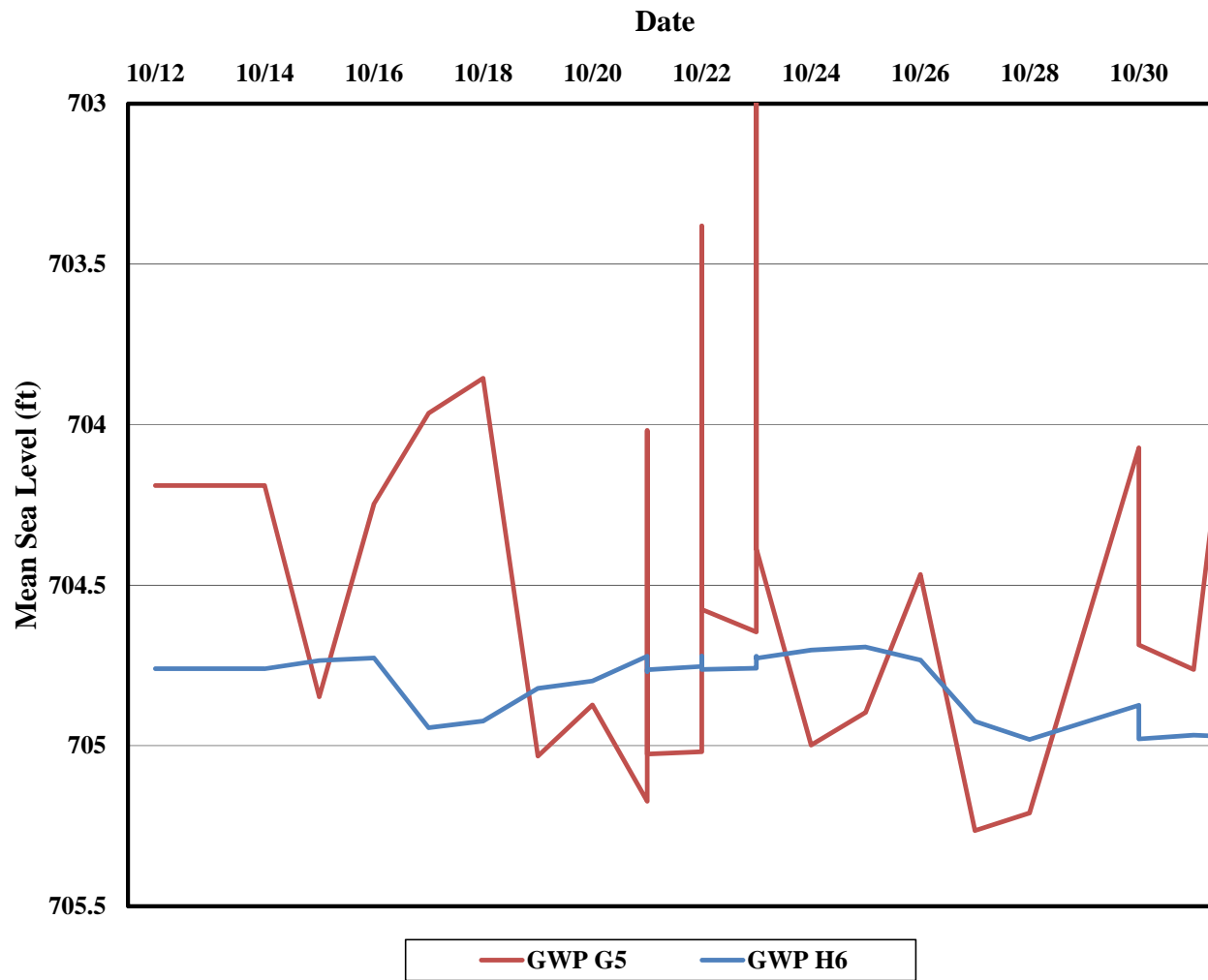




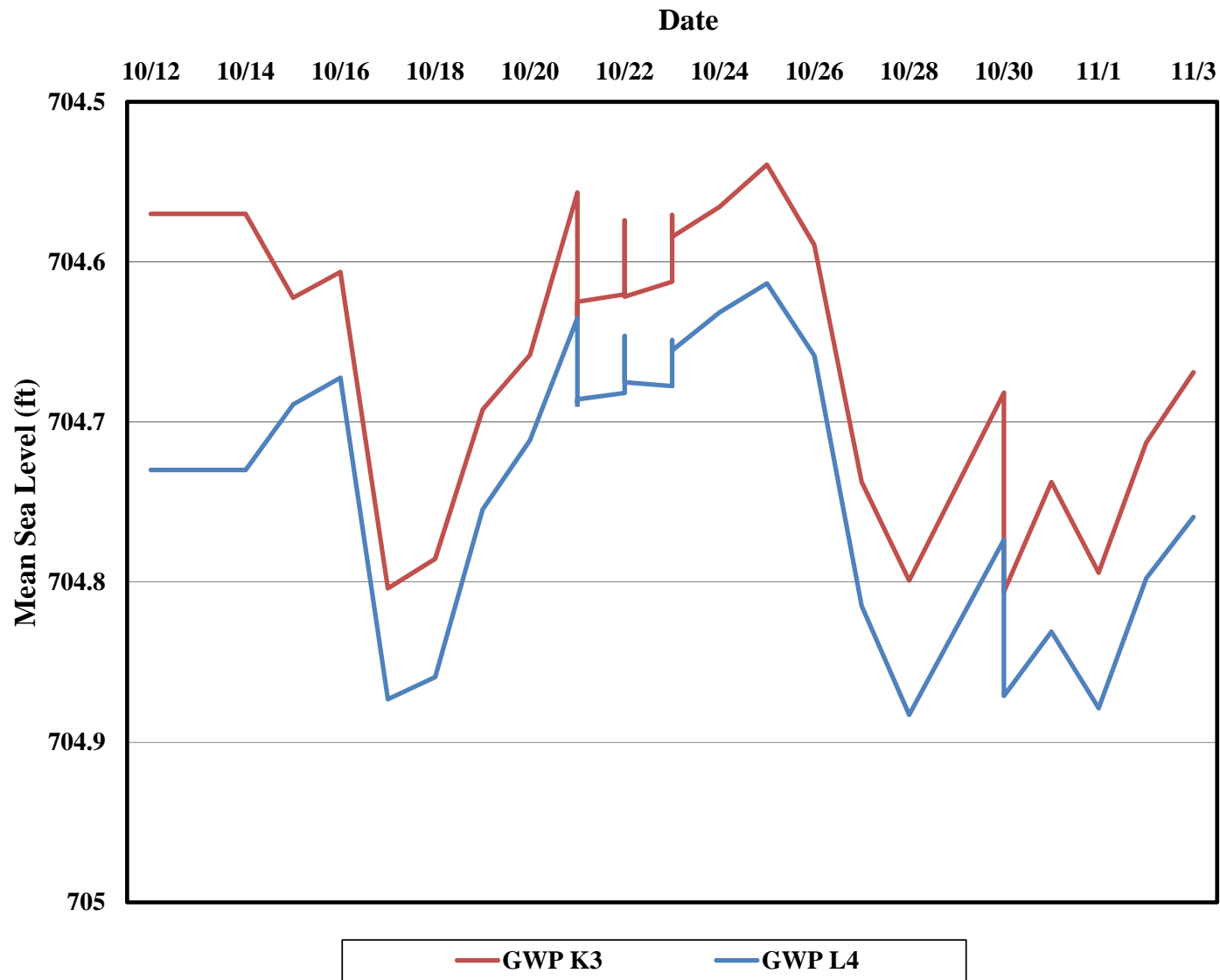
**Figure 4a.** GWP B4 and GWP C3



**Figure 4b.** GWP E3 and GWP F3



**Figure 4c.** GWP G5 and GWP H6



**Figure 4c.** GWP K3 and GWP L4





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November 14, 2016

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**Subject: ERH Weekly Report**  
**October 31, 2016 to November 14, 2016**  
**Southeast Rockford Groundwater Contamination Site Area 4**  
**2630 Marshall Street, Rockford, Illinois.**

Dear Mr. Conrath,

This letter report contains a brief description of the Electrical Resistance Heating (ERH) remediation operations performed at 2630 Marshall Street, Rockford, Illinois. The time period addressed in this report is from October 31 to November 14, 2016.

### **ERH Application Summary**

The ERH system operational parameters for start-up period through October 31, 2016 are presented below in **Table 1**.

**Table 1. Key ERH System Operational Parameters**

<b>ERH System Parameters</b>	<b>October 31</b>	<b>November 14</b>
Weekly Average Power (kW)	489	371
Cumulative Energy Applied (kWh)	195,280	326,290
Average Subsurface Temperature (°C)	46.9	58.2
Average Vapor System Flow Rate (scfm)	813	860
Duration of System Shutdown (approximate hours)	6	126
Discharge to GETS flowrate (gpm)	0.3	0.6
Total water discharged to GETS	7,646	16,449

The ERH system experienced several shutdowns over the operating period due to the inability to discharge water to the GETS system. The GETS system continues to struggle with filters plugging at a higher rate than normal. At the request of Bodine, TRS removed the LGAC system from service and installed two parallel bag filter housings fitting with 25 µM poly propylene bag filters to match the filter size of the GETS system. This work was completed on November 7, 2016. After another GETS system shut down, TRS elected to begin recycling the condensate and entrained water within the

condenser to minimize the excess water needed for discharge in an effort to increase ERH runtime. This has resulted in additional ERH runtime, but only can keep the ERH system operational for about a day while the GETS system is offline. TRS will likely need to rent a storage tank to keep the ERH system operational.

During start-up testing, a potential voltage issue was identified in the street west of the site. TRS attempted to coat the trench scar with rubberized paint, but it was unsuccessful in completely removing the problem. TRS elected to repave the trench scar using asphalt in accordance with the City of Rockford permit criteria. The top two inches of the street was removed on November 4, 2016 and the street was repaved on November 9, 2016. TRS placed the street electrodes on line for the first time on November 10, 2016 and additional voltage testing confirmed that voltage issue had been mitigated.

The groundwater piezometer (GWP) at G5 has been repaired. After a second inspection, the atmospheric equalization tube was found to be kinked at a connection point. The kink was removed and the fitting was reconnected. The repair has resulted in much more stable readings.

### **Temperatures**

The average subsurface temperature in the treatment area increased from 46.9 degrees Celsius (°C) to 58.2 °C during the reporting period. The highest individual temperature measurement within the treatment volume was 98.9°C. This was recorded at TMP location M5 at 27-feet below ground surface (bgs).

For the purpose of adequately illustrating the temperature change, the data was broken into seven separate graphs based on the TMP location. Temperatures relative to depth for each TMP are presented in **Figures 2a** through **2g**. Average subsurface temperature over time is presented in **Figure 3**.

### **Power and Energy**

The PCU averaged 489 kilowatts (kW) of applied power to the treatment volume during the reporting period. A total of 326,290 kilowatt-hours (kWh) of energy have been applied to the subsurface as of November 14, 2016.

### **ERH Vapor Recovery**

During this reporting period, the average vacuum applied to the subsurface was approximately 4.7 inches of mercury (in Hg). The vapor stream flow rate as measured after the vapor recovery blower averaged 860 standard cubic feet per minute (scfm).

Vapor samples are collected from the influent and effluent to and from the vapor GAC system whenever TRS is onsite. Analysis is performed using a photoionization detection (PID) MiniRae 3000. In accordance with the Work Plan, vapor samples are also collected once per week during the first four weeks of operations and sent of site for analysis by TO-15. The available results of the PID and TO-15 analysis can be found in the attached Tables 3, 4 and 5. The PID readings and TO-15 data confirm that the VGAC system is performing as designed and operating in accordance with the substantive requirements. Based on PID readings, TRS estimates that 365 pounds of VOCs have been removed from the treatment volume.

## ERH Process Water

During this reporting period the ERH system discharged 8,802 gallons to the GETS system at an average rate of 0.6 gpm. The water recovered by the ERH system is passed through a filter and two LGAC vessels prior to discharge to the GETS system. The water recovered and treated prior to being sent to GETS system is analyzed once per week by an outside lab. The results of these analyses are provided in Table 6. The LGAC system has been working as intended.

## Groundwater and Vapor Piezometers

TRS collects vapor piezometer readings at least once a week while on site to illustrate full vacuum influence across the site. The readings collected through the reporting period are presented in **Table 2**.

**Table 2. Site VP Readings**

Date/Time	VP-B4	VP-C2	VP-D4	VP-G4	VP-K5	VP-L4	VP-L7	VP-M6
10/14/16	1.0	1.0	3.0	8.0	8.5	3.0	3.0	4.0
10/18/16	1.5	1.5	4.0	8.8	8.0	3.0	3.3	3.5
10/24/16	1.5	1.5	3.5	5.5	6.5	2.5	3.0	3.0
11/2/16	1.5	1.5	4.0	5.0	6.5	2.5	3.0	3.5
11/10/16	1.0	1.0	4.5	5.0	7.0	2.5	2.5	3.5

In addition to the vapor piezometer readings TRS also collects groundwater piezometer readings daily through automated data collection. The groundwater piezometer readings are presented graphically in **Figures 4a** through **4d**. Note that the readings from GWP G5 are errant and TRS is not sure of the cause. TRS noted the odd trend during start up and took manual readings to determine that the automated readings were in fact incorrect. TRS continues to assess the function of the groundwater piezometer. As the readings show, there is fluctuation within the piezometer, it is consistent change from inside and outside the treatment volume. Regardless, TRS has started DVE at approximately 75% of the electrodes.

The GETS system operated with EW2 and EW3 online during this operational period recovering about 60 gpm from both wells. EW3 is located in the middle of the treatment volume in the street.

The piezometer data does show either no change between inside and outside the treatment volume or an inward gradient that developed as shown in Figure 4a.

## Planned Activities

TRS personnel will visit the site the week of November 14, 2016 to collect operations data, optimize the system, and perform weekly maintenance. A water storage tank will likely be mobilized and installed. TRS will also evaluate the need and potentially schedule a change out of the vapor-phase carbon vessel.

Should you have any questions concerning this report, or if you would like any additional information, please contact either me or Chris Thomas by phone at (360) 560-7551 and (847) 376-3691, respectively.

Sincerely,  
TRS Group, Inc.



Bradley Morris  
Project Manager

Attachments: Table 3,4,5 - Vapor Concentrations  
Table 6 – LGAC performance  
Figure 1 – Site Plan  
Figure 2a – TMP D3 Temperature vs. Depth  
Figure 2b – TMP F4 Temperature vs. Depth  
Figure 2c – TMP H3 Temperature vs. Depth  
Figure 2d – TMP K4 Temperature vs. Depth  
Figure 2e – TMP K5 Temperature vs. Depth  
Figure 2f – TMP K7 Temperature vs. Depth  
Figure 2g – TMP M5 Temperature vs. Depth  
Figure 3 – Subsurface Temperatures vs. Time  
Figure 4a – GWP B4 and C3  
Figure 4b – GWP E3 and F3  
Figure 4c – GWP G5 and H6  
Figure 4d – GWP K3 and L4  
Figure 5 – ERH Performance

cc/att: Chris Thomas, TRS  
Tim Warner, TRS



## **Attachments**

Table 3 – PID Results

Date	Blower Effluent Flow Rate (scfm)	PID Based Influent Conc (ppm)	PID Based Effluent Conc (ppm)	PID based VOC Recovery Rate (lbs/day)	PID based Total VOC Recovery (lbs)	PID based VOC Discharge Rate (lbs/day)	PID based Total VOC Discharged (lbs)	Lab Based Total VOC Recovery Rate (lbs/day)
10/17/16	830	25.6	0.0	10.4	0.0	0.0	0.0	
10/18/16	830	53.4	0.0	21.7	15.0	0.0	0.0	8.1
10/19/16	830	37.0	0.0	15.0	29.7	0.0	0.0	
10/24/16	834	50.2	0.0	20.5	119	0.0	0.0	
10/25/16	837	55.2	0.0	22.6	145	0.0	0.0	46.5
10/26/16	839	67.9	0.0	27.8	168	0.0	0.0	
10/27/16	850	81.0	0.0	33.6	193	0.0	0.0	
10/28/16	861	96.0	1.0	40.4	233	0.4	0.2	
10/31/16	860	110.0	3.0	46.2	365	1.3	2.8	
11/1/16	845	83.0	8.0	34.3	399	3.3	4.7	56.0
11/2/16	859	105.0	7.0	44.1	440	2.9	7.9	
11/3/16	860	160.0	15.0	67.2	497	6.3	12.8	
11/7/16	860	143.3	52.3	60.2	752	22.0	69.3	
11/10/16	869	142.7	45.1	60.6	946	19.1	135	

Table 4 – TO-15 Influent to VGAC

Date	1,1,1 TCA (ug/m3)	1,1 DCE (ug/m3)	1,1 DCA (ug/m3)	Other 8260 (ug/m3)	Other as Decane (ug/m3)	Total VOCs (ug/m3)	Total VOC Recovery Rate (lbs/day)
10/18/16	100,000	280	3,400	5,450	NS	109,130	8
10/25/16	50,000	7,200	1,700	6,900	469,690	620,095	47
11/1/16	53,000	29,000	430	23,670	633,670	739,770	56

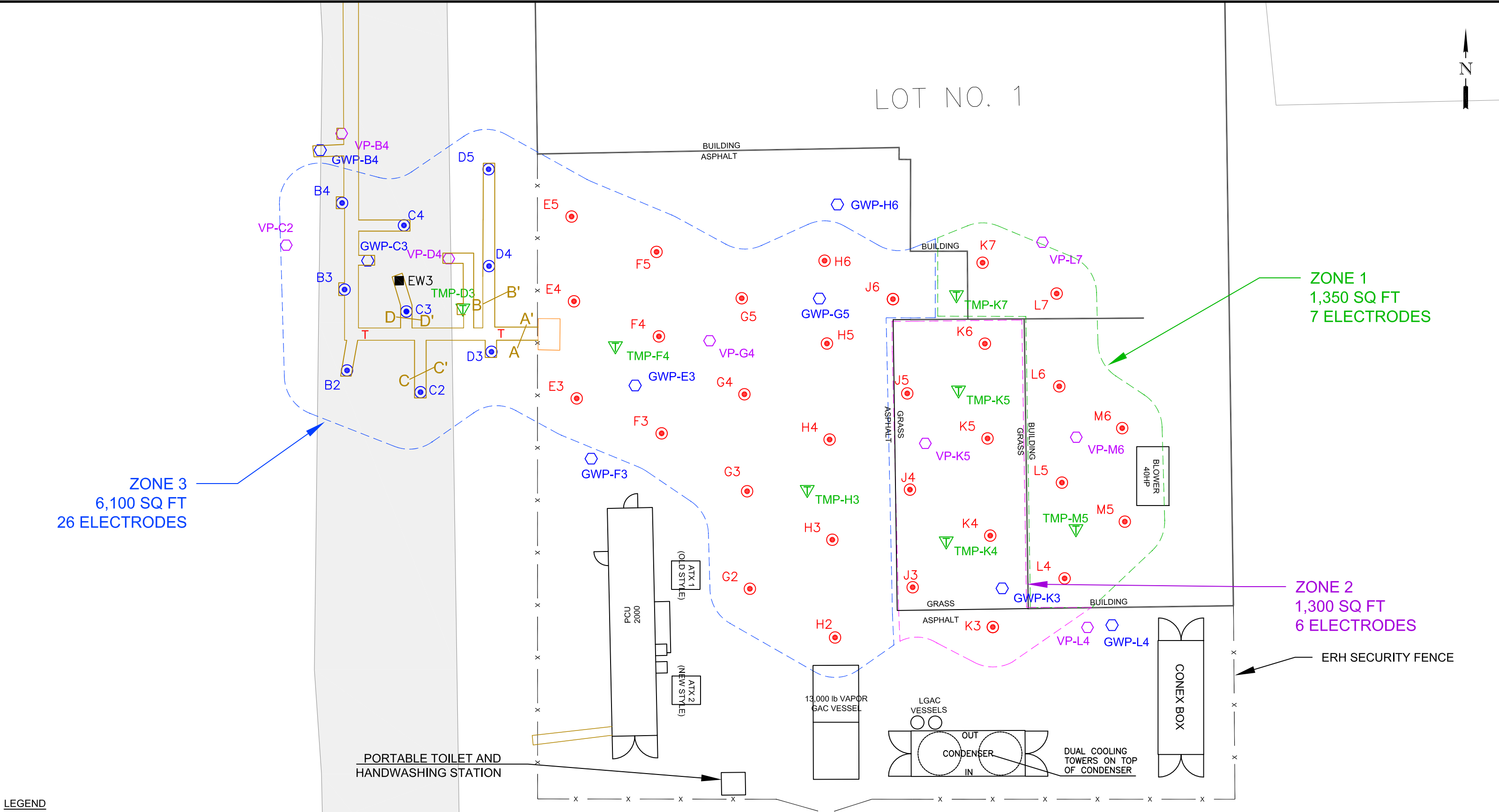
Table 5 – TO 15 Effluent from VGAC

Date	1,1,1 TCA Conc. (ug/m3)	1,1 DCE Conc. (ug/m3)	1,1 DCA Conc. (ug/m3)	Other 8260 (ug/m3)	Other as Decane (ug/m3)	Total VOCs (ug/m3)	Total VOC Discharge Rate (lbs/day)
10/18/16	47	ND	ND	410	NS	457	0
10/25/16	5,200	110	430	17	NS	5,757	0
11/1/16	72,000	8,300	ND	ND	NS	80,300	6



Table 6 – LGAC Performance

	10/18/16	10/25/16	11/1/16	11/7/16
Temperature (F)	75	80	85	84
pH	8.1	8.0	8.6	9
Pre LGAC Carbon Tetrachloride	ND	ND	ND	ND
Pre LGAC DCE	ND	8.4	17	15.0
Pre LGAC 1,1,1 - TCA	47	110	69	24
Pre LGAC 1,1,2 - TCA	0	1.5	2	2
Pre LGAC TCE	ND	1.1	1	0,72
Pre LGAC PCE	ND	ND	ND	1
Pre LGAC Total Contaminants Concentration	248	457	300	1,014
Mid LGAC Carbon Tetrachloride	ND	ND	ND	LGAC off
Mid LGAC DCE	ND	ND	ND	
Mid LGAC 1,1,1 - TCA	ND	ND	ND	
Mid LGAC 1,1,2 - TCA	ND	ND	ND	
Mid LGAC TCE	ND	ND	ND	
Mid LGAC PCE	ND	ND	ND	
Mid LGAC Total Contaminants Concentration	191	193	0	
Post LGAC Carbon Tetrachloride	ND	ND	ND	LGAC off
Post LGAC DCE	ND	ND	ND	
Post LGAC 1,1,1 - TCA	ND	ND	ND	
Post LGAC 1,1,2 - TCA	ND	ND	ND	
Post LGAC TCE	ND	ND	ND	
Post LGAC PCE	ND	ND	ND	
Post LGAC Total Contaminants Concentration	249.0	214.9	24	



**LEGEND**

- ELECTRODE (QTY 30)
- BELOW GRADE ELECTRODE (QTY 9)
- TEMPERATURE MONITORING POINT (QTY 7)
- VAPOR PIEZOMETER (QTY 8)
- EXISTING EXTRACTION WELL TO BE COOLED
- TEMPERATURE SENSING DEVICE FOR TRENCH MONITORING
- GROUNDWATER PIEZOMETER (QTY 8)
- TRENCH CROSS SECTION LOCATION


0 8 16 32  
SCALE IN FEET

LICENSED PROFESSIONAL ENGINEER  
DANIEL W. OBERLE  
062.066003  
OF ILLINOIS  
06/15/16  
ENGINEER SIGNATURE / DATE

**TRS**  
Accelerating Value

TRS GROUP, INC. 338 COMMERCE AVE., SUITE 304, LONGVIEW, WA 98632

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DESIGNED BY C. LANSING	SITE LOCATION SOUTHEAST ROCKFORD AREA 4 ROCKFORD, ILLINOIS		
DRAWN BY A. WAGNER	CLIENT IL, EPA		
CHECKED BY D. OBERLE	FIGURE 1		
PROJECT MANAGER B. MORRIS			
QSAT REVIEW 06/06/16	APPROVED FOR CONSTRUCTION BY  DATE 06/15/16	DATE 05/20/2016	PROJECT RFD75
		SHEET	

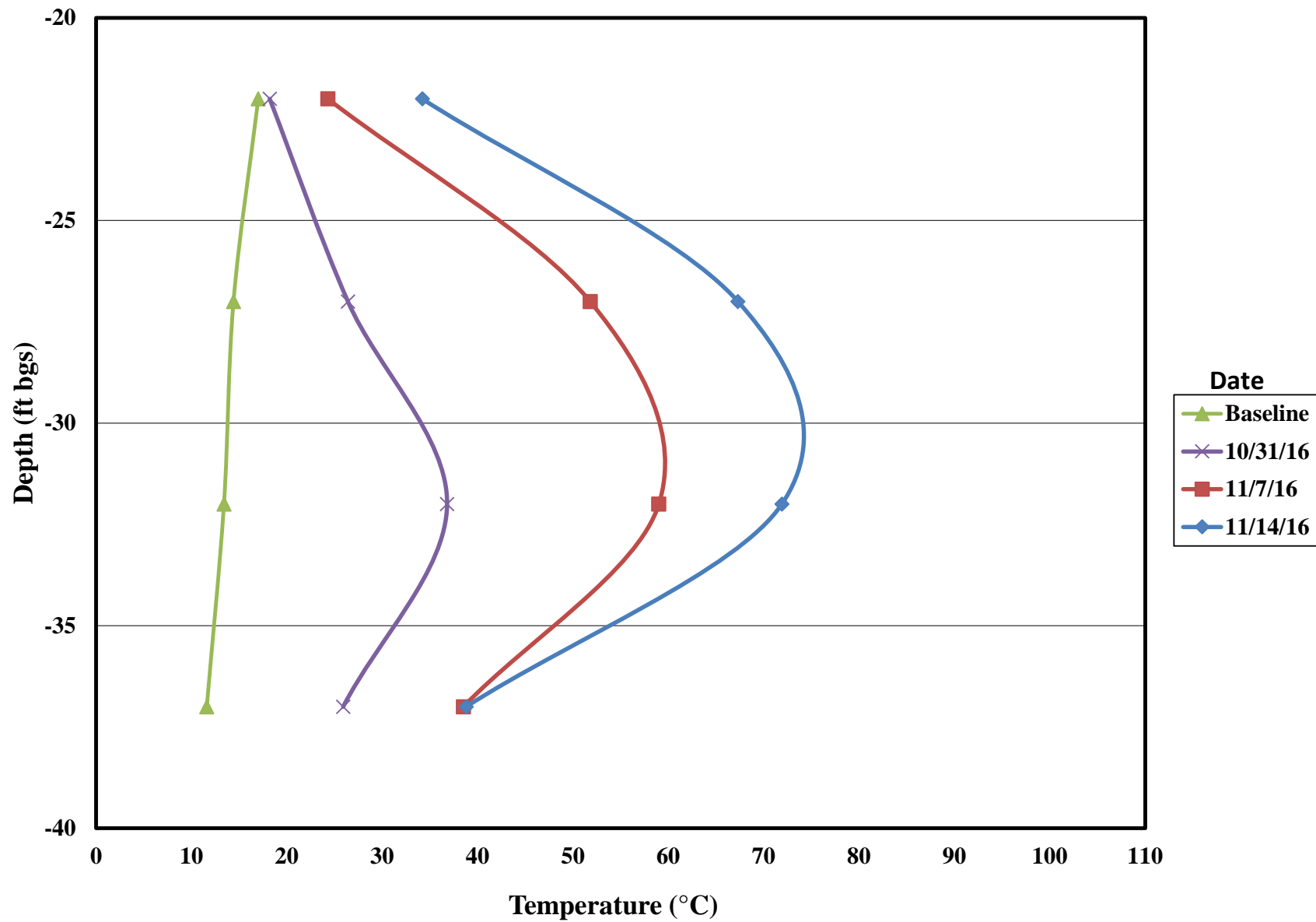
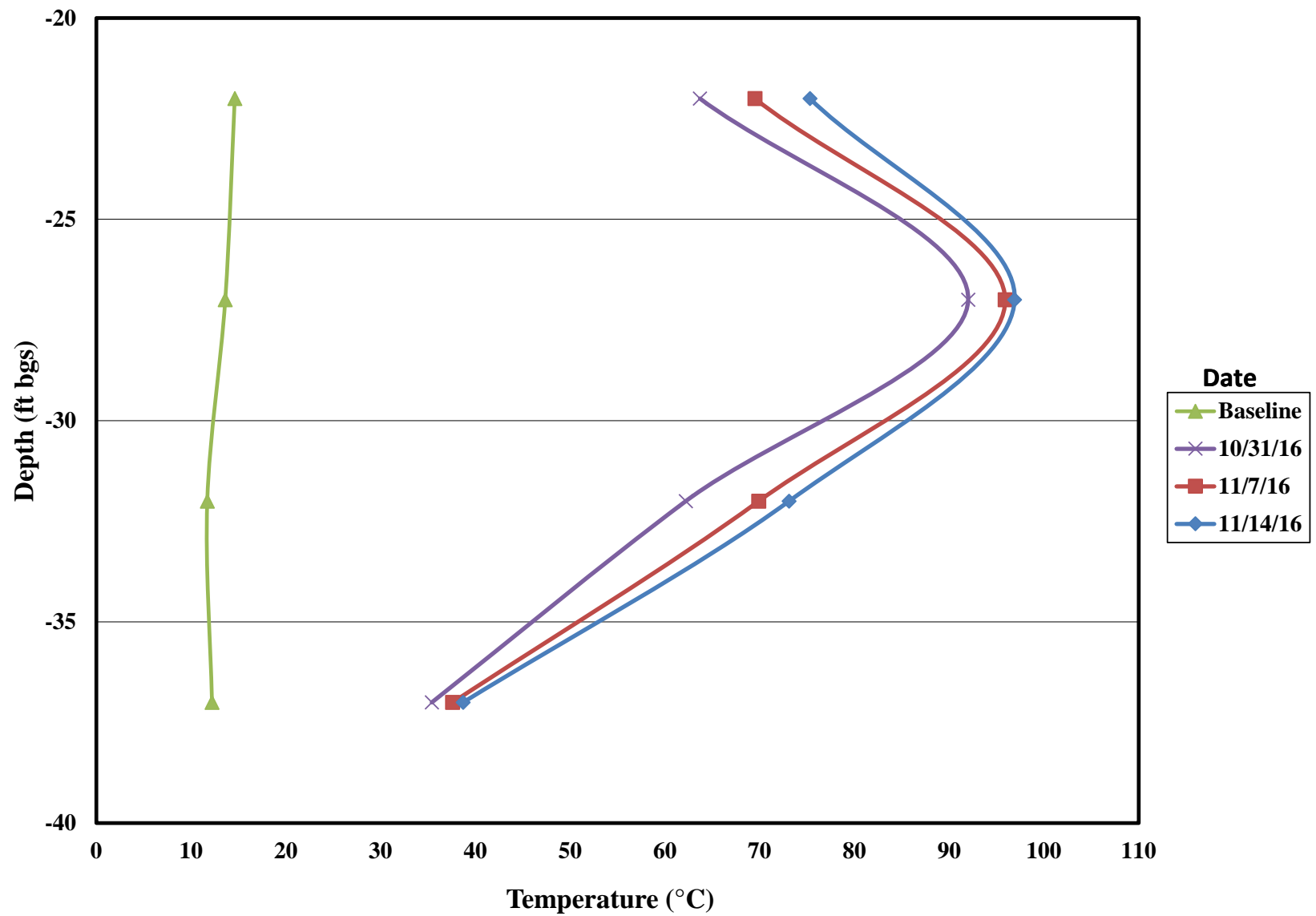


Figure 2a. TMP D3 Temperature vs. Depth



**Figure 2b.** TMP F4 Temperature vs. Depth



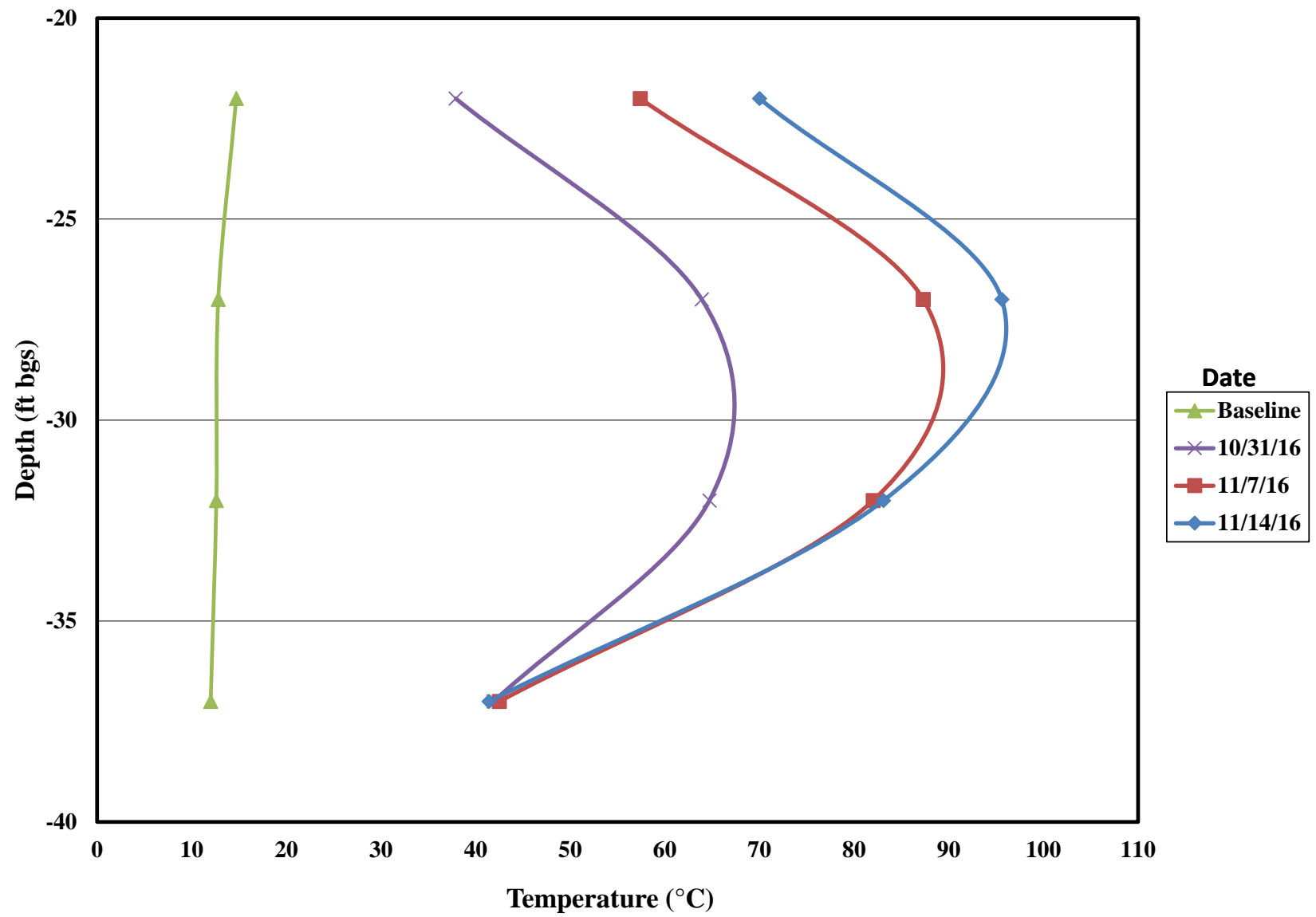
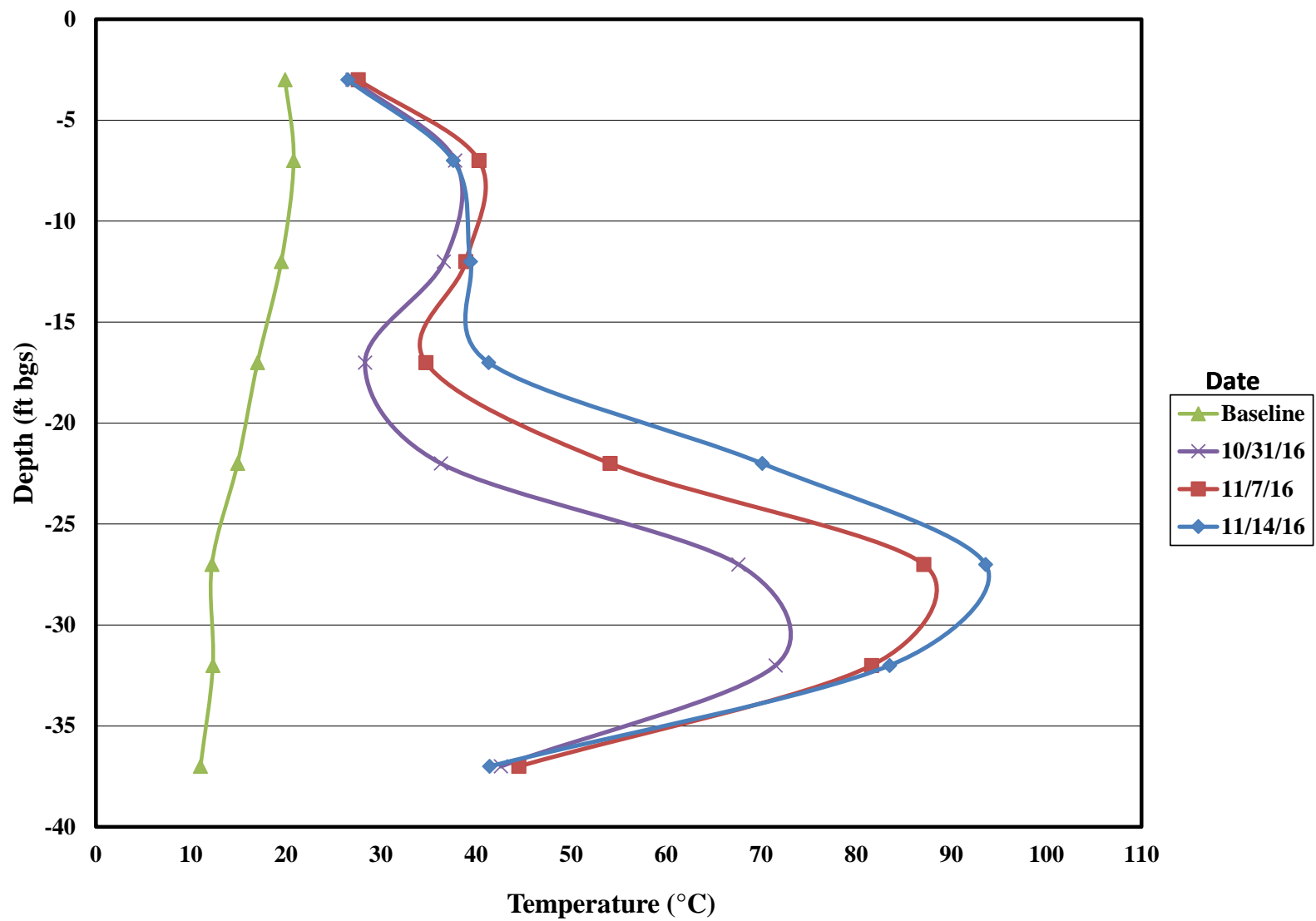
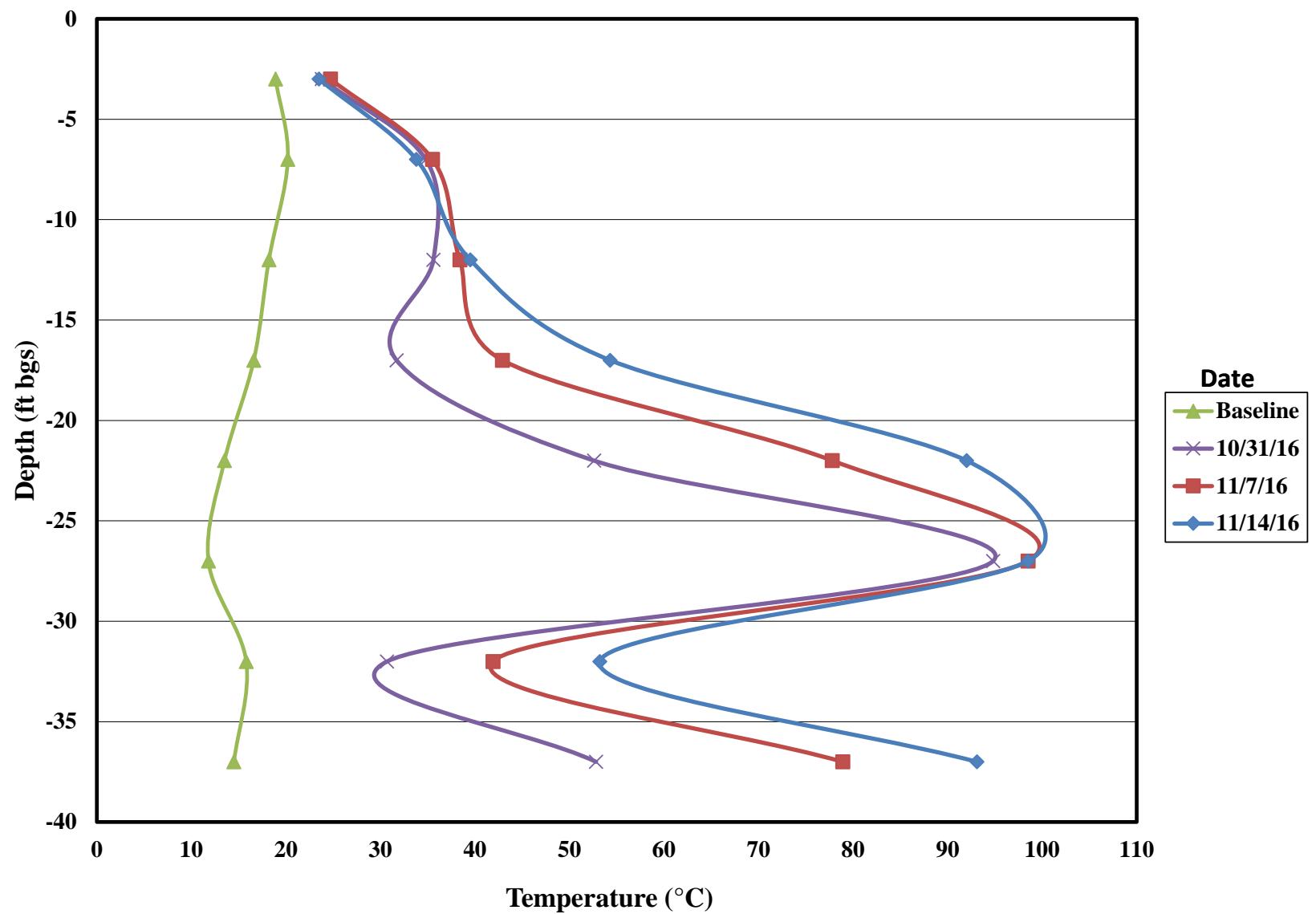


Figure 2c. TMP H3 Temperature vs. Depth



**Figure 2d.** TMP K4 Temperature vs. Depth



**Figure 2e.** TMP K5 Temperature vs. Depth

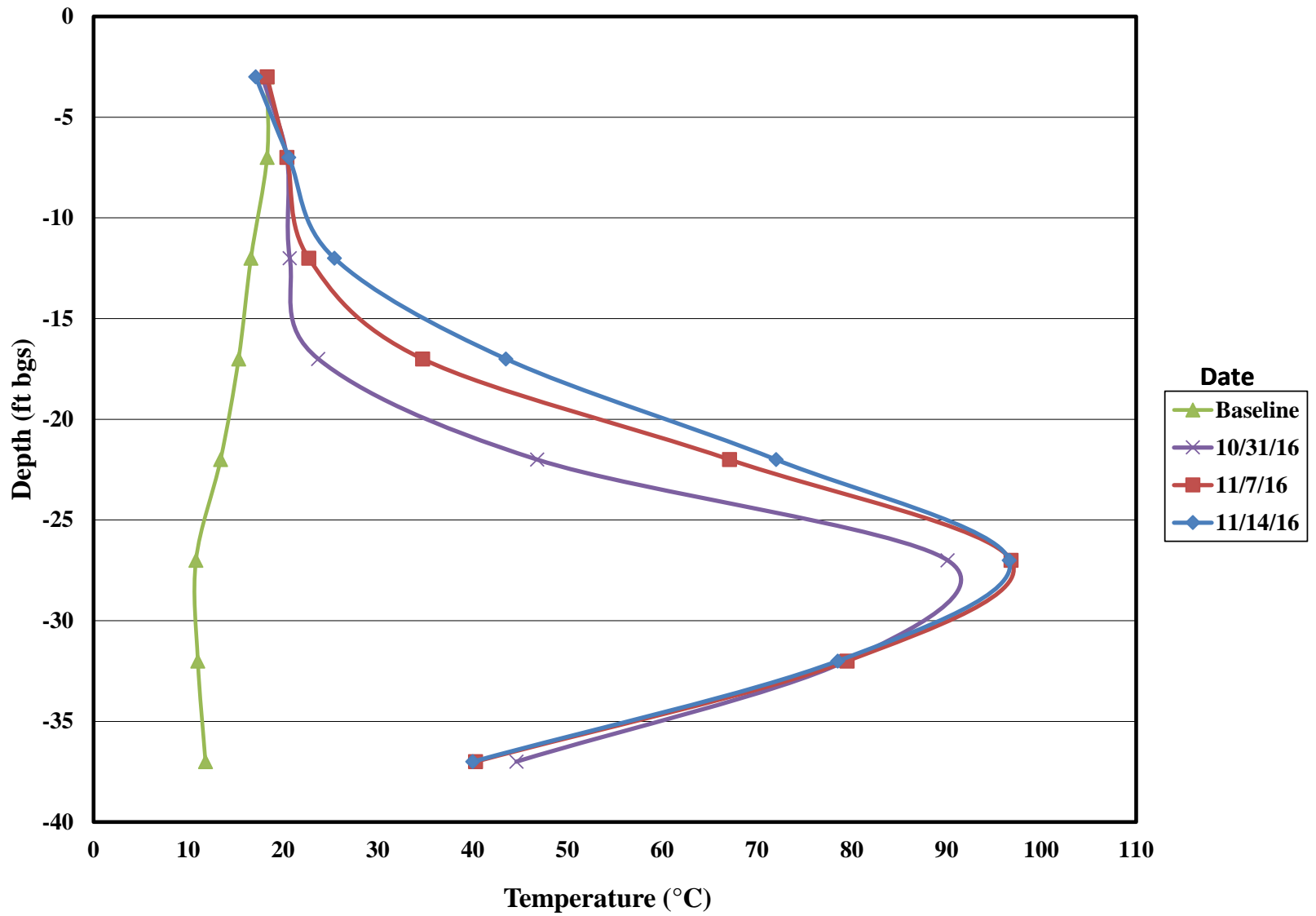


Figure 2f. TMP K7 Temperature vs. Depth



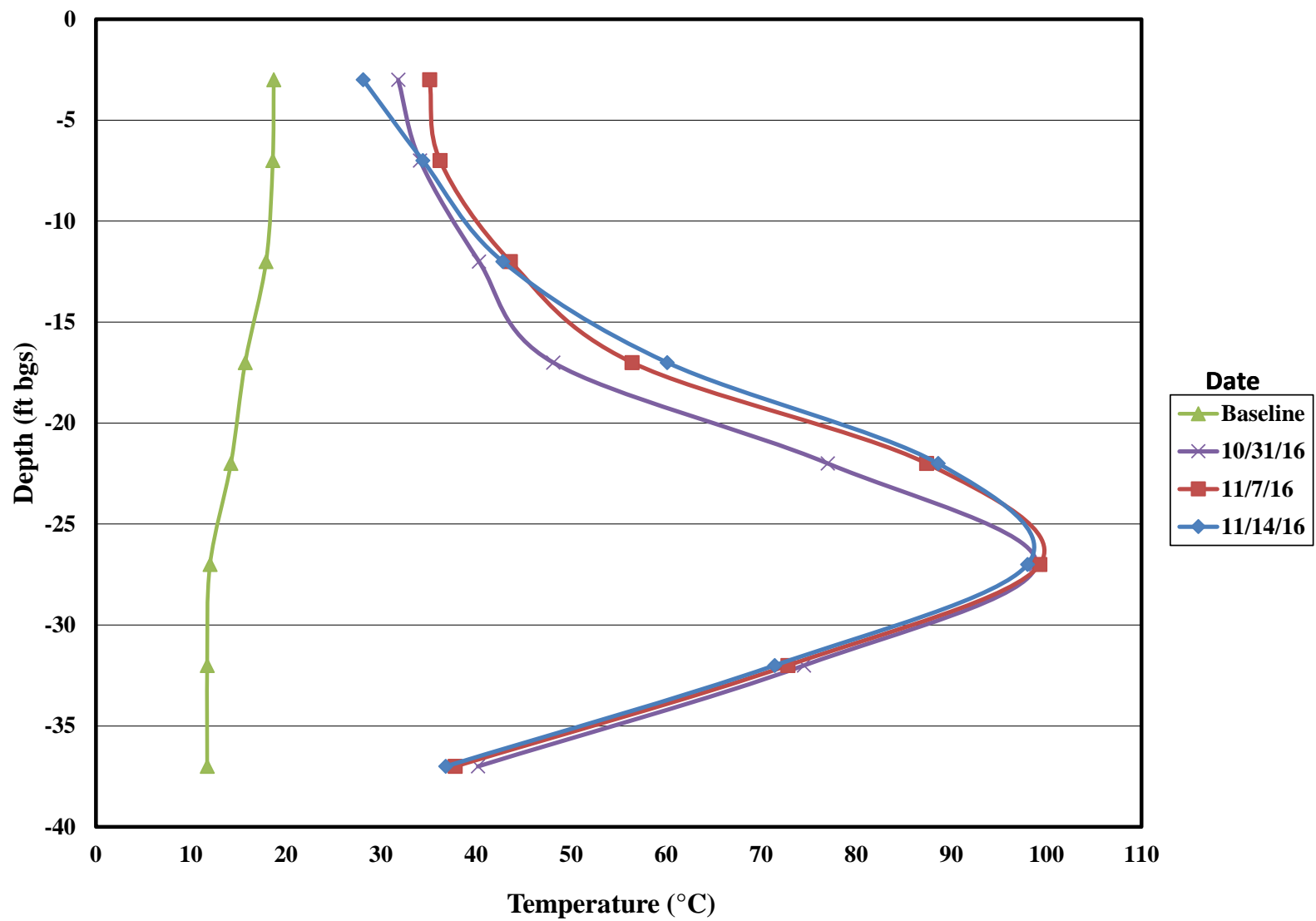
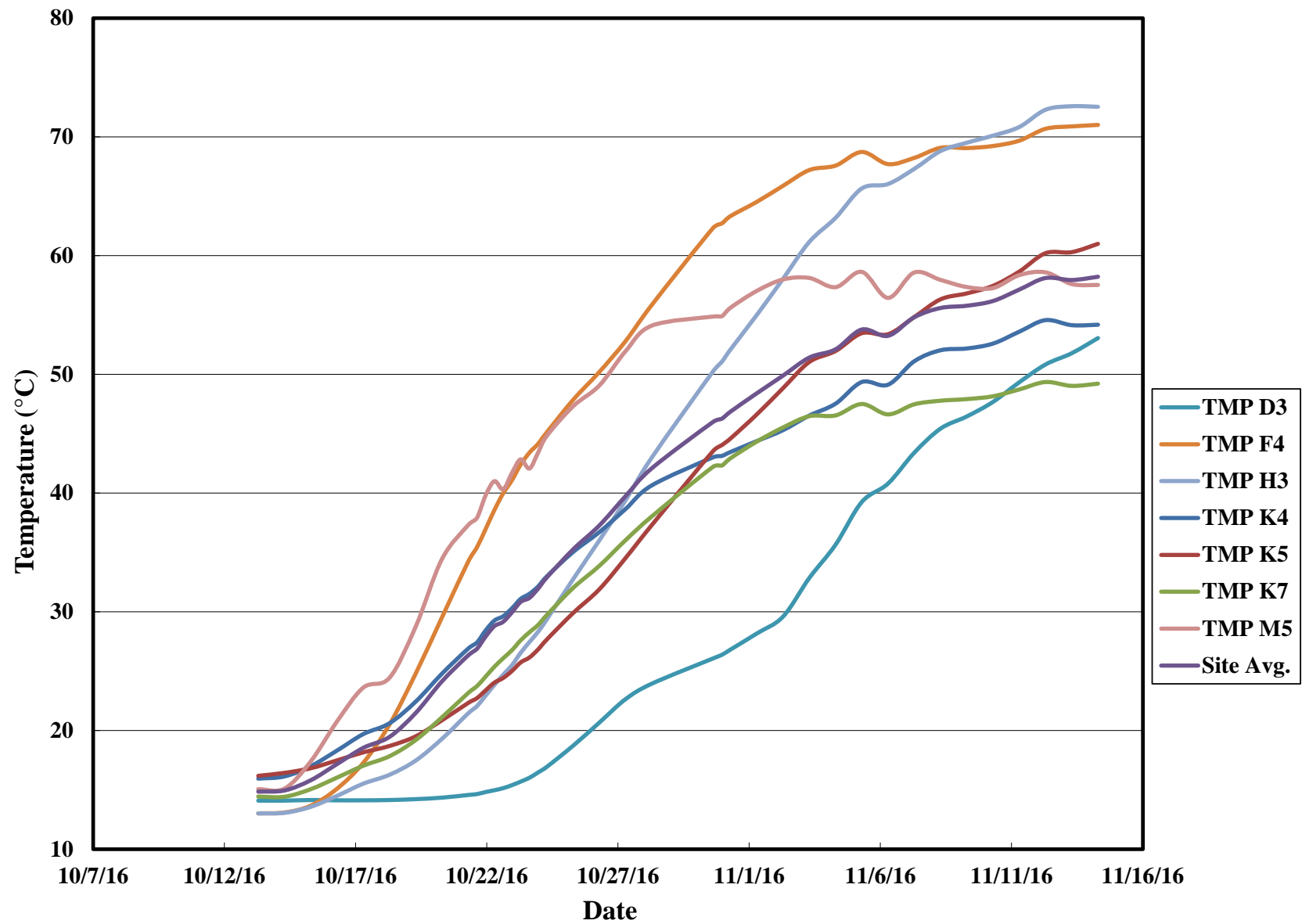
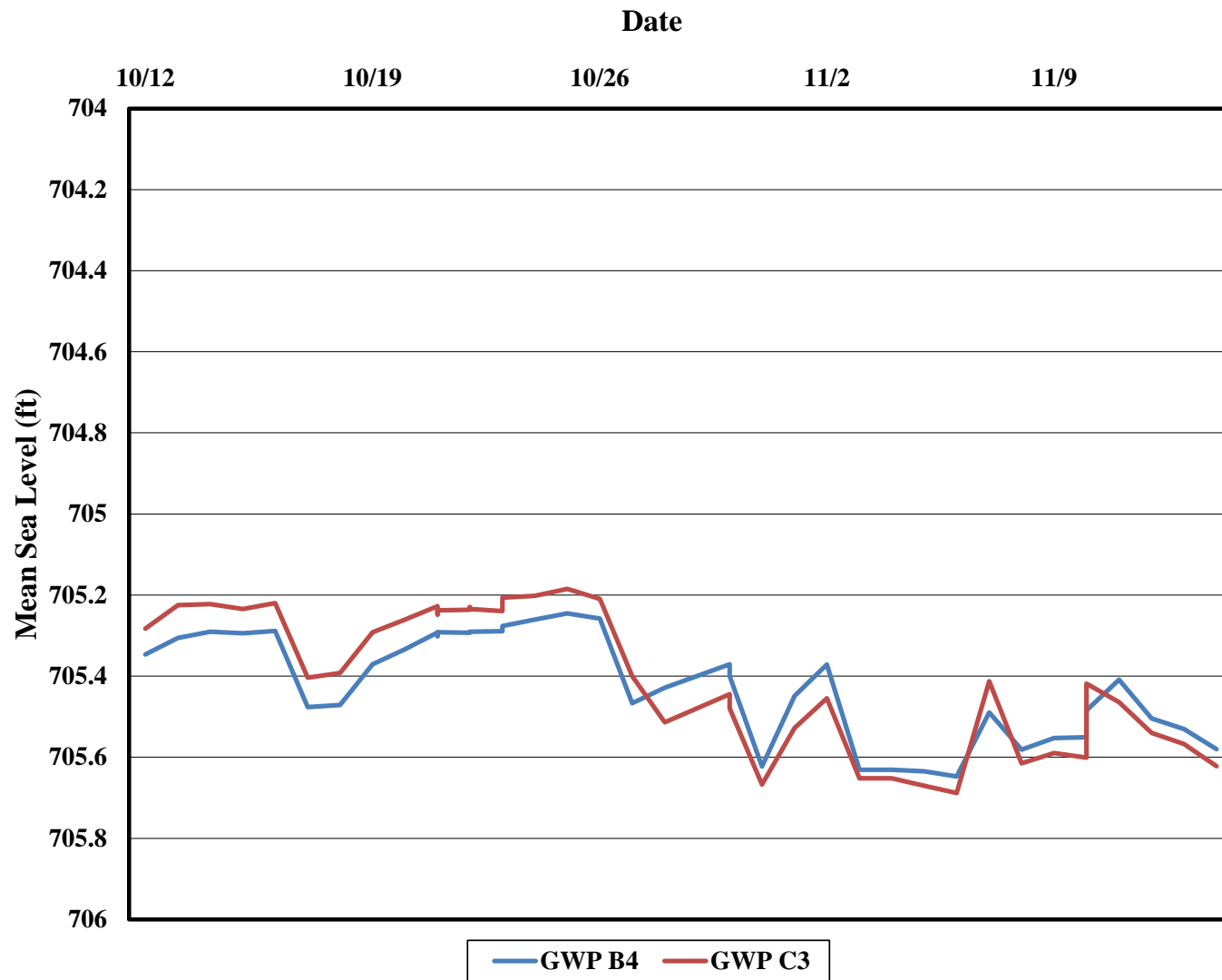


Figure 2g. TMP M5 Temperature vs. Depth



**Figure 3.** Subsurface Temperatures vs. Time



**Figure 4a.** GWP B4 and GWP C3

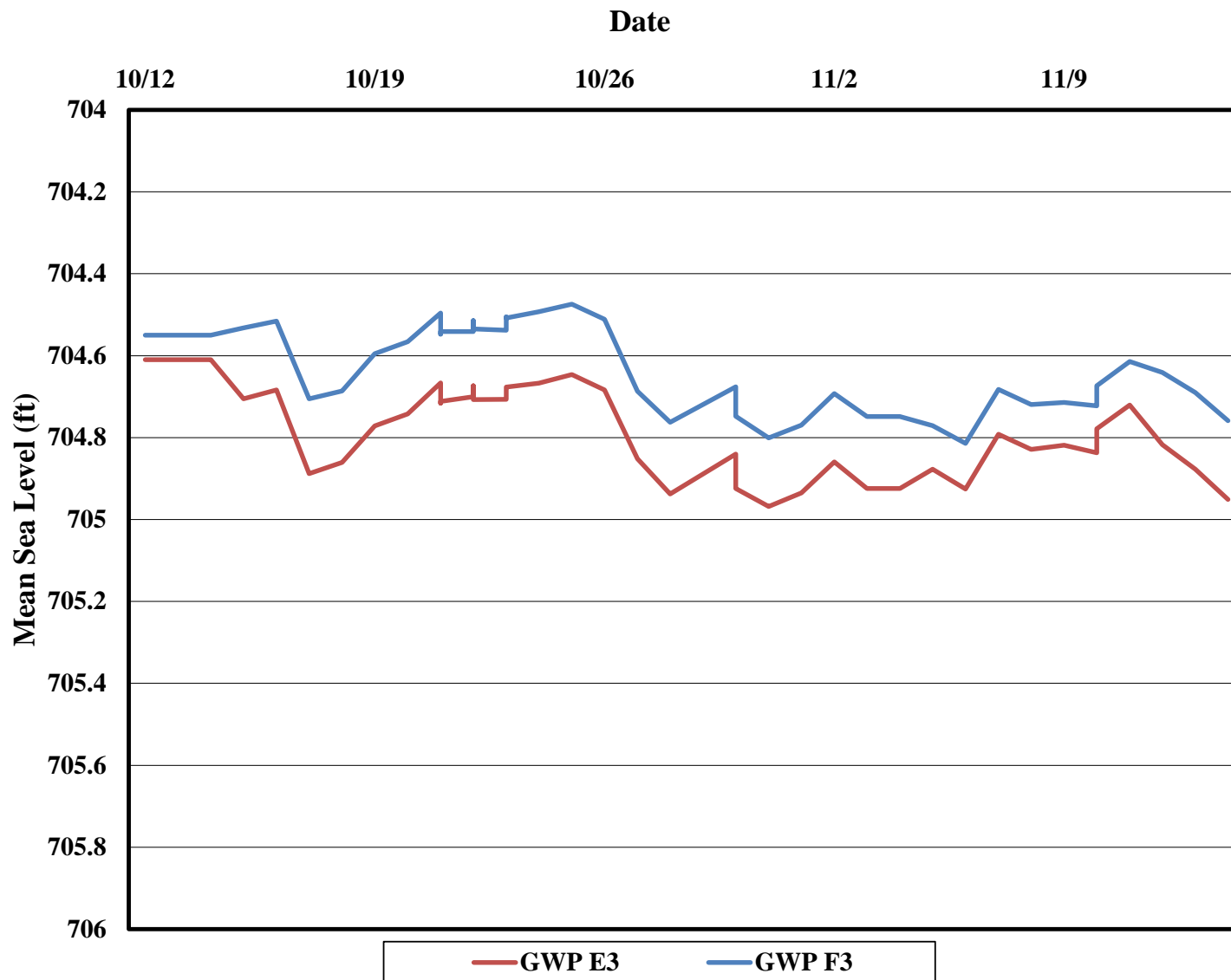
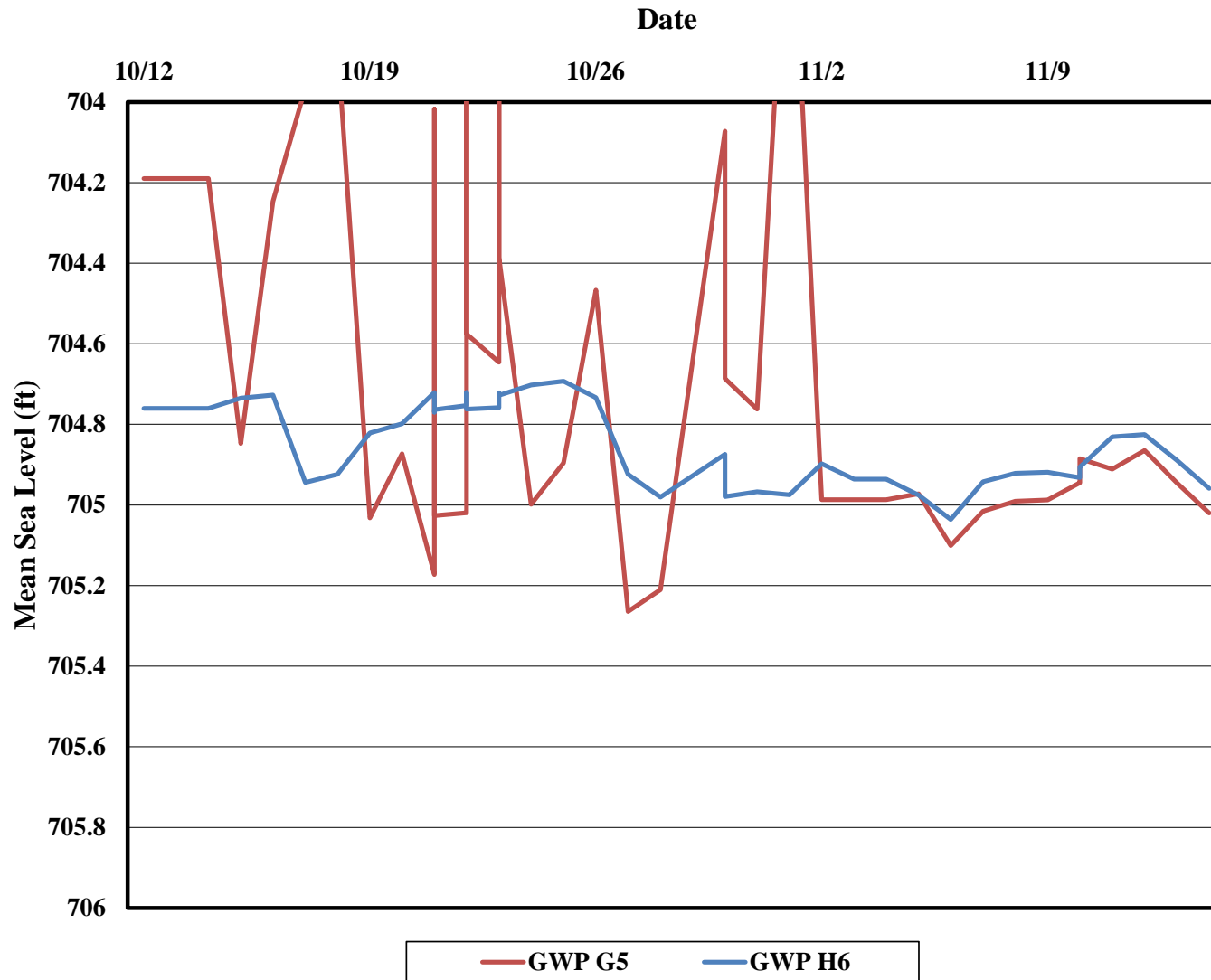
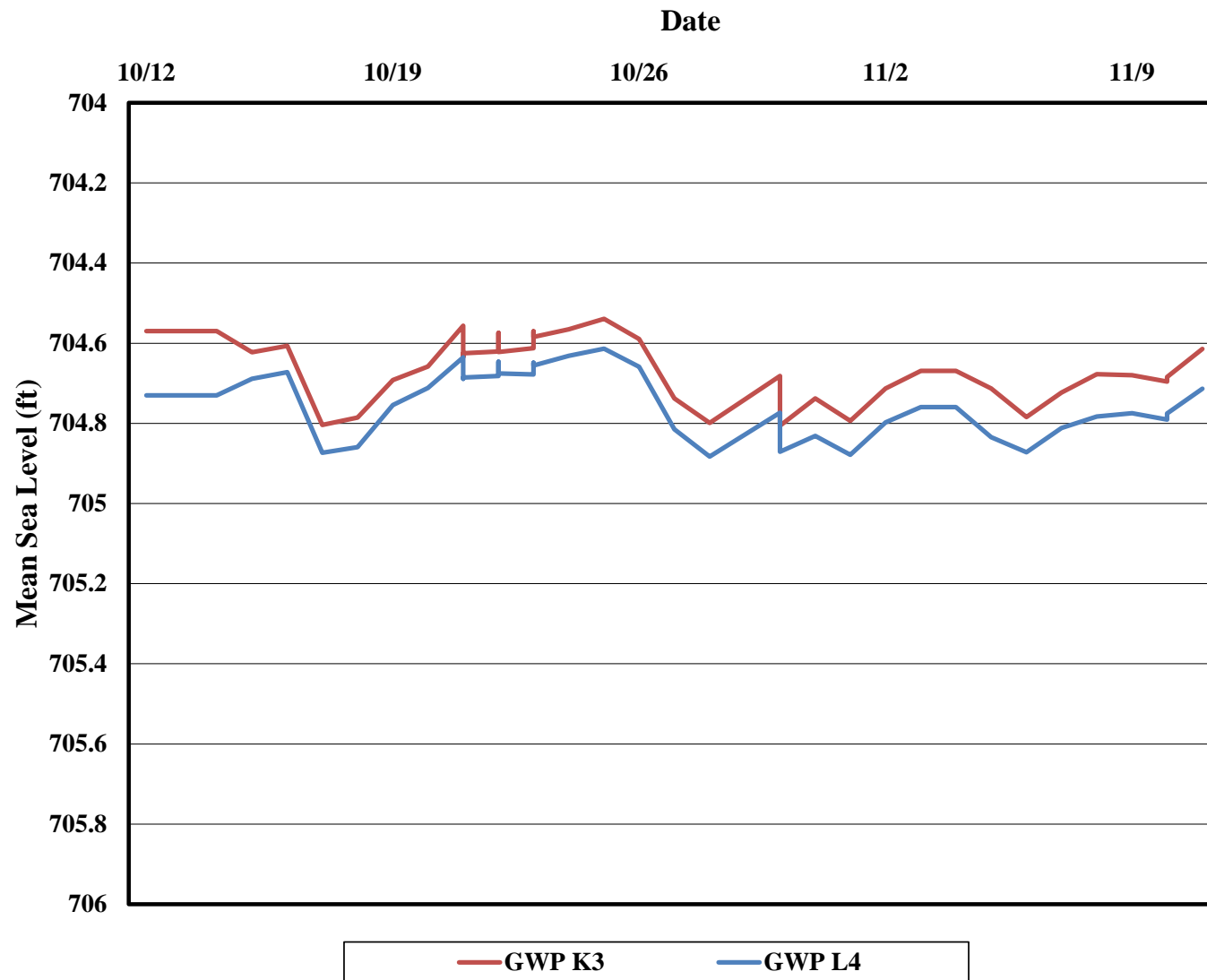


Figure 4b. GWP E3 and GWP F3

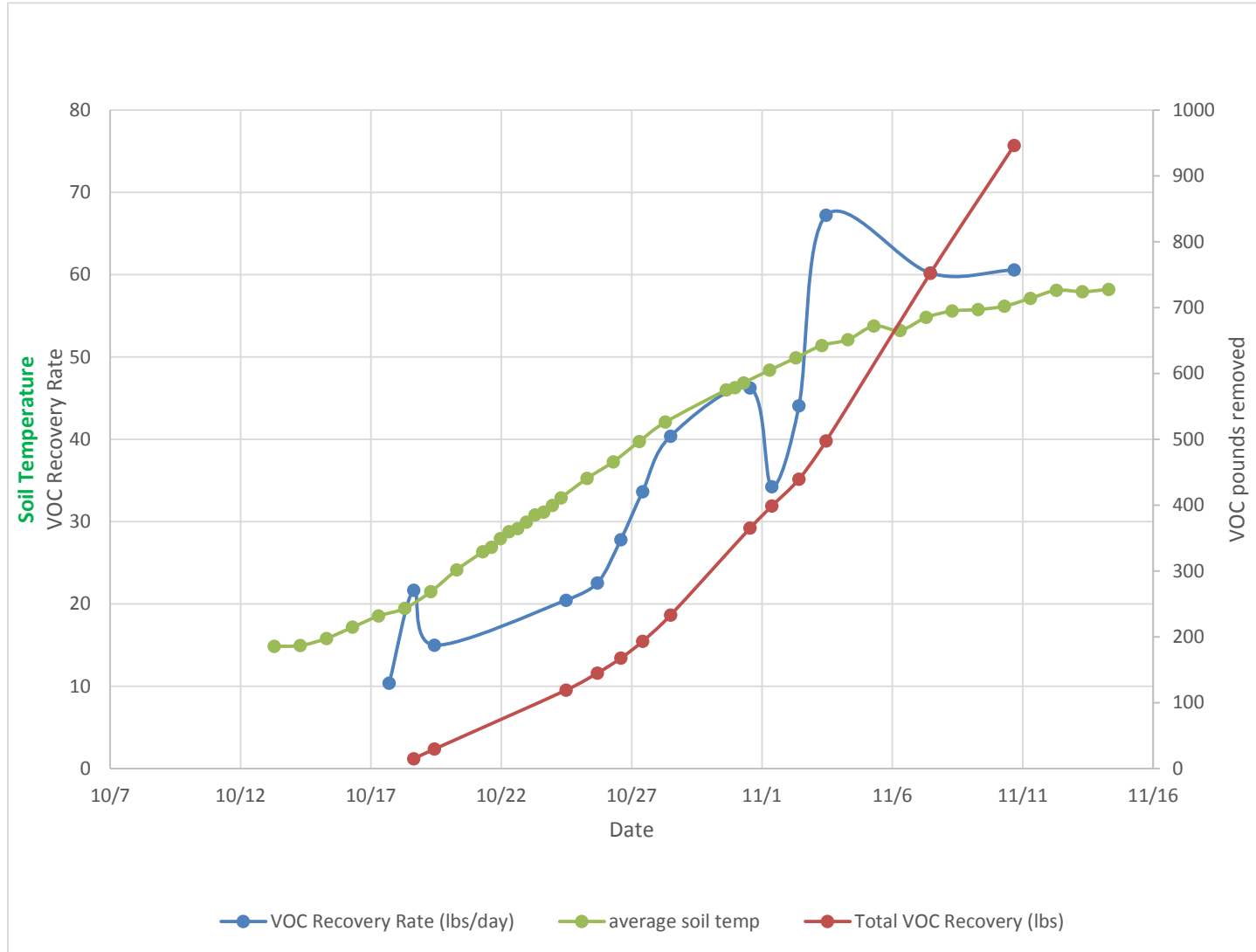




**Figure 4c.** GWP G5 and GWP H6



**Figure 4c. GWP K3 and GWP L4**



**Figure 5. ERH Performance**



TRS Group, Inc.  
PO Box 737  
Longview, WA 98632  
www.thermalrs.com

November 21, 2016

Mr. Brian Conrath  
Remedial Project Manager  
Illinois Environmental Protection Agency  
1021 N. Grand Ave. East  
Springfield, Illinois 62702  
(217) 557-8155  
Brian.Conrath@Illinois.gov

**Subject: ERH Weekly Report**  
**November 14, 2016 to November 21, 2016**  
**Southeast Rockford Groundwater Contamination Site Area 4**  
**2630 Marshall Street, Rockford, Illinois.**

Dear Mr. Conrath,

This letter report contains a brief description of the Electrical Resistance Heating (ERH) remediation operations performed at 2630 Marshall Street, Rockford, Illinois. The time period addressed in this report is from November 14 to November 21, 2016.

### ERH Application Summary

The ERH system operational parameters for start-up period through November 21, 2016 are presented below in **Table 1**.

**Table 1. Key ERH System Operational Parameters**

<b>ERH System Parameters</b>	<b>November 14</b>	<b>November 21</b>
Weekly Average Power (kW)	371	712
Cumulative Energy Applied (kWh)	326,290	444,700
Average Subsurface Temperature (°C)	58.2	66.4
Average Vapor System Flow Rate (scfm)	860	842
Duration of System Shutdown (approximate hours)	126	14
Discharge to GETS flow rate (gpm)	0.6	0.13
Total water discharged to GETS	16,449	17,986

The ERH system experienced a shut down on Sunday, November 20, 2016. The shutdown was due to a frozen blowdown line and lasted about 14 hrs. TRS returned to the site on Monday to restart the system. TRS was onsite during the reporting period to collect data and optimize system operation. TRS also installed a 6,000 gallon process water storage tank to be placed in service, if additional storage is needed. TRS also initiated the electrode drip system to ensure maintain electrical conductivity at the Zone 1 and 2 electrodes. TRS began preparing for winter operations by installing heat trace and insulation on exposed water lines.



## **Temperatures**

The average subsurface temperature in the treatment area increased from 58.2 degrees Celsius (°C) to 66.4 °C during the reporting period. The highest individual temperature measurement within the treatment volume was 98.9°C. This was recorded at TMP location M5 at 27-feet below ground surface (bgs).

For the purpose of adequately illustrating the temperature change, the data is presented in seven separate graphs based on the TMP location. Temperatures relative to depth for each TMP are presented in **Figures 2a through 2g**. Average subsurface temperature over time is presented in **Figure 3**.

## **Power and Energy**

The PCU averaged 712 kilowatts (kW) of applied power to the treatment volume during the reporting period. A total of 444,700 kilowatt-hours (kWh) of energy have been applied to the subsurface as of November 21, 2016.

## **ERH Vapor Recovery**

During this reporting period, the average vacuum applied to the subsurface was approximately 5.0 inches of mercury (in Hg). The vapor stream flow rate as measured after the vapor recovery blower averaged 842 standard cubic feet per minute (scfm).

Vapor samples are collected from the influent and effluent of the vapor GAC system whenever TRS is onsite. Analysis is performed using a photoionization detection (PID) MiniRae 3000. In accordance with the Work Plan, vapor samples are also collected once per week during the first four weeks of operations and sent off site for analysis by TO-15. The available results of the PID and TO-15 analysis can be found in the attached Tables 3, 4 and 5. The PID readings and TO-15 data confirm that the VGAC system is performing as designed and operating in accordance with the substantive discharge requirements. Based on PID readings, TRS estimates that 1,341 pounds of VOCs have been removed from the treatment volume.

## **ERH Process Water**

During this reporting period the ERH system discharged 1,537 gallons to the GETS system at an average rate of 0.13 gpm during this reporting period. The water recovered by the ERH system is passed through a particulate filter and two LGAC vessels prior to discharge to the GETS system. The water recovered and treated with LGAC prior to being sent to the GETS system is analyzed once per week by an offsite lab. The results of these analyses are provided in Table 6. The LGAC system has been working as intended.

## **Groundwater and Vapor Piezometers**

TRS collects vapor piezometer readings at least once a week while on site to illustrate full vacuum influence across the site. The readings collected through the reporting period are presented in **Table 2**.

**Table 2. Site VP Readings (inches water column)**

Date/Time	VP-B4	VP-C2	VP-D4	VP-G4	VP-K5	VP-L4	VP-L7	VP-M6
10/14/16	1.0	1.0	3.0	8.0	8.5	3.0	3.0	4.0
10/18/16	1.5	1.5	4.0	8.8	8.0	3.0	3.3	3.5
10/24/16	1.5	1.5	3.5	5.5	6.5	2.5	3.0	3.0
11/2/16	1.5	1.5	4.0	5.0	6.5	2.5	3.0	3.5
11/10/16	1.0	1.0	4.5	5.0	7.0	2.5	2.5	3.5
11/15/16	1.0	1.0	4.0	4.5	7.0	3.0	2.5	3.0

In addition to the vapor piezometer readings TRS also collects groundwater elevation measurement readings daily through automated data collection. The groundwater elevation readings are presented graphically in **Figures 4a** through **4d**. As the readings show, there is fluctuation within the piezometer, it is consistent change from inside and outside the treatment volume.

The GETS system operated with ground water pumping well EW3 online during this operational period recovering about 30 gpm from the well. EW3 is located in the middle of the treatment volume in the street.

The piezometer data does show either no change between inside and outside the treatment volume or an inward gradient that developed as shown in **Figure 4a**.

### **Planned Activities**

TRS personnel will visit the site the week of November 21, 2016 to collect operations data, optimize the system, and perform weekly system maintenance. Due to signs of break-through, the VGAC vessel carbon will be replaced on November 22. Based on remediation progress and percent energy input, TRS is working on scheduling the first soil sampling event for the week of December 5, 2016.

Should you have any questions concerning this report, or if you would like any additional information, please contact either me or Chris Thomas by phone at (360) 560-7551 and (847) 376-3691, respectively.

Sincerely,  
TRS Group, Inc.



Bradley Morris  
Project Manager

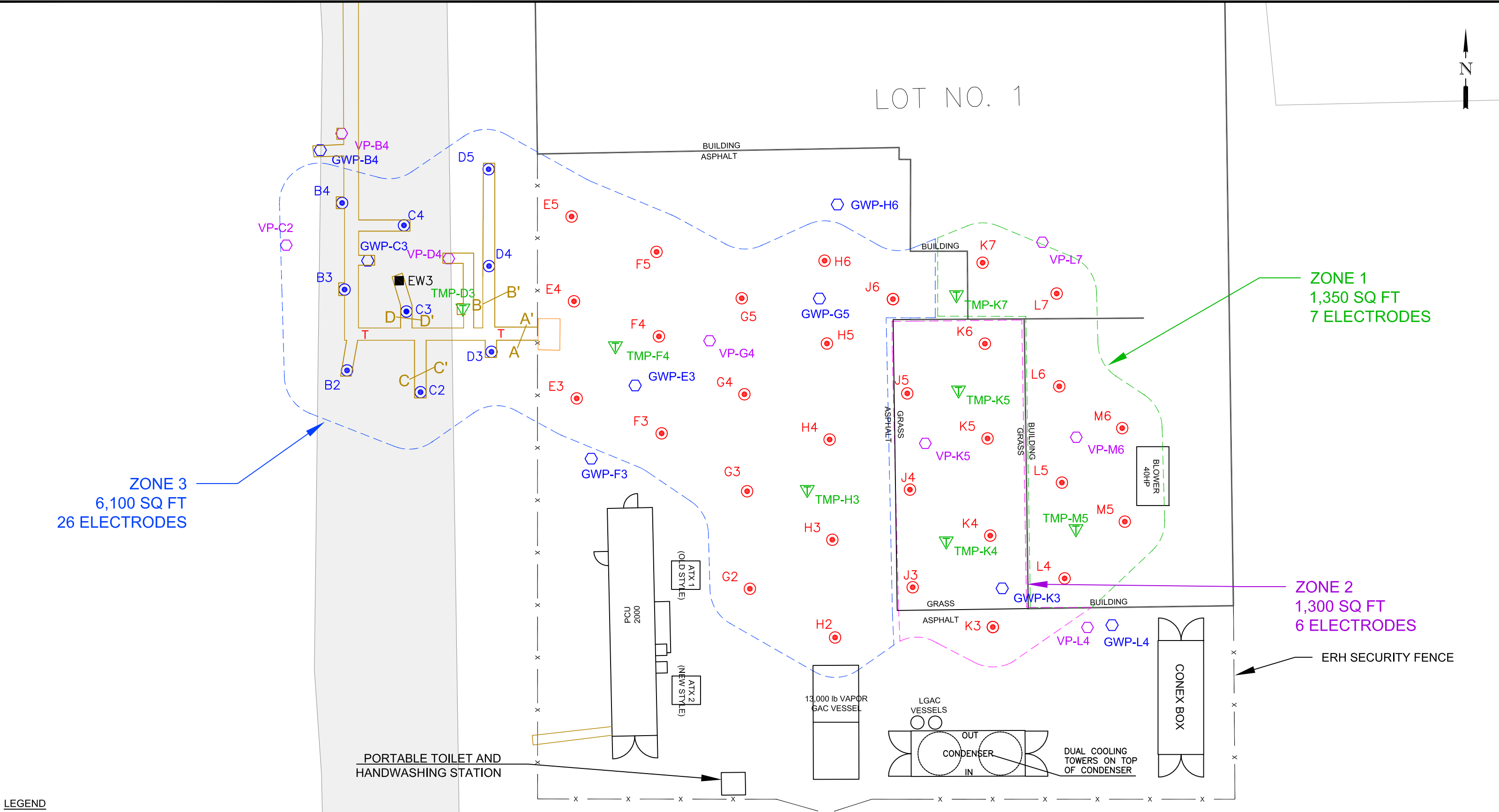
Attachments: Table 3, 4, 5 - Vapor Concentrations  
Table 6 – LGAC performance  
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Figure 4d – GWP K3 and L4  
Figure 5 – ERH Performance

cc/att: Chris Thomas, TRS  
Tim Warner, TRS

## Attachments





**LEGEND**

- ELECTRODE (QTY 30)
- BELOW GRADE ELECTRODE (QTY 9)
- ▼ TEMPERATURE MONITORING POINT (QTY 7)
- VAPOR PIEZOMETER (QTY 8)
- EXISTING EXTRACTION WELL TO BE COOLED
- T TEMPERATURE SENSING DEVICE FOR TRENCH MONITORING
- GROUNDWATER PIEZOMETER (QTY 8)
- A-A' TRENCH CROSS SECTION LOCATION

0 8 16 32  
SCALE IN FEET

<p>DANIEL W. OBERLE 062.066003 OF ILLINOIS</p> <p><i>Daniel Oberle</i> 06/15/16 ENGINEER SIGNATURE / DATE</p>	<p>TRS GROUP, INC. 338 COMMERCE AVE., SUITE 304, LONGVIEW, WA 98632</p> <p><b>CONFIDENTIAL:</b> INFORMATION CONTAINED IN THIS DOCUMENT IS CONFIDENTIAL AND THE PROPERTY OF TRS GROUP, INC. NO INFORMATION CONTAINED HEREIN MAY BE DUPLICATED, USED OR DISTRIBUTED WITHOUT THE EXPRESSED WRITTEN PERMISSION OF TRS GROUP, INC. LONGVIEW, WA.</p>	DESIGNED BY C. LANSING	SITE LOCATION SOUTHEAST ROCKFORD AREA 4 ROCKFORD, ILLINOIS		
		DRAWN BY A. WAGNER	CLIENT IL, EPA		
		CHECKED BY D. OBERLE	<p align="center"><b>FIGURE 1</b></p>		
		PROJECT MANAGER B. MORRIS			
<p>06/06/16</p>	<p>06/06/16</p>	<p>APPROVED FOR CONSTRUCTION</p> <p>BY <i>Daniel Oberle</i></p> <p>DATE 06/15/16</p>	<p>DATE 05/20/2016</p>	<p>PROJECT RFD75</p>	
		<p>SHEET</p>			

Table 4 – PID Monitoring Results

Date	Blower Effluent Flow Rate (scfm)	PID Based Influent Conc (ppm)	PID Based Effluent Conc (ppm)	PID based VOC Recovery Rate (lbs/day)	PID based Total VOC Recovery (lbs)	PID based VOC Discharge Rate (lbs/day)	PID based Total VOC Discharged (lbs)	Lab Based Total VOC Recovery Rate (lbs/day)
10/17/16	830	25.6	0.0	10.4	0.0	0.0	0.0	
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10/19/16	830	37.0	0.0	15.0	29.7	0.0	0.0	
10/24/16	834	50.2	0.0	20.5	119	0.0	0.0	
10/25/16	837	55.2	0.0	22.6	145	0.0	0.0	46.5
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10/28/16	861	96.0	1.0	40.4	233	0.4	0.2	
10/31/16	860	110.0	3.0	46.2	365	1.3	2.8	
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11/2/16	859	105.0	7.0	44.1	440	2.9	7.9	
11/3/16	860	160.0	15.0	67.2	497	6.3	12.8	
11/7/16	860	143.3	52.3	60.2	752	22.0	69.3	
11/10/16	869	142.7	45.1	60.6	946	19.1	135	
11/14/16	860	70.0	53.0	29.4	1,122	22.3	216	
11/16/16	878	172.0	92.0	73.8	1,215	39.5	272	
11/18/16	824	127.0	82.0	51.1	1,341	33.0	345	

Date	1,1,1 TCA (ug/m3)	1,1 DCE (ug/m3)	1,1 DCA (ug/m3)	Other 8260 (ug/m3)	Other as Decane (ug/m3)	Total VOCs (ug/m3)	Total VOC Recovery Rate (lbs/day)
10/18/16	100,000	280	3,400	5,450	NS	109,130	8
10/25/16	50,000	7,200	1,700	6,900	469,690	620,095	47
11/1/16	53,000	29,000	430	23,670	633,670	739,770	56
11/7/16	13,000	16,000	2,800	21,625	749,022	802,447	62

Table 5 – TO 15 Effluent from VGAC

Date	1,1,1 TCA Conc. (ug/m3)	1,1 DCE Conc. (ug/m3)	1,1 DCA Conc. (ug/m3)	Other 8260 (ug/m3)	Other as Decane (ug/m3)	Total VOCs (ug/m3)	Total VOC Discharge Rate (lbs/day)
10/18/16	47	ND	ND	410	NS	457	0
10/25/16	5,200	110	430	17	NS	5,757	0
11/1/16	72,000	8,300	ND	ND	NS	80,300	6
11/7/16	100,000	15,000	5,800	1,370	NS	122,170	9



Table 6-LGAC and GETS discharge data

	10/18/16	10/25/16	11/1/16	11/7/16
Temperature (F)	75	80	85	84
pH	8.1	8.0	8.6	9
Pre LGAC Carbon Tetrachloride	ND	ND	ND	ND
Pre LGAC DCE	ND	8.4	17	15.0
Pre LGAC 1,1,1 - TCA	47	110	69	24
Pre LGAC 1,1,2 - TCA	0	1.5	2	2
Pre LGAC TCE	ND	1.1	1	0,72
Pre LGAC PCE	ND	ND	ND	1
Pre LGAC Total Contaminants Concentration	248	457	300	1,014
Mid LGAC Carbon Tetrachloride	ND	ND	ND	LGAC off
Mid LGAC DCE	ND	ND	ND	
Mid LGAC 1,1,1 - TCA	ND	ND	ND	
Mid LGAC 1,1,2 - TCA	ND	ND	ND	
Mid LGAC TCE	ND	ND	ND	
Mid LGAC PCE	ND	ND	ND	
Mid LGAC Total Contaminants Concentration	191	193	0	
Post LGAC Carbon Tetrachloride	ND	ND	ND	LGAC off
Post LGAC DCE	ND	ND	ND	
Post LGAC 1,1,1 - TCA	ND	ND	ND	
Post LGAC 1,1,2 - TCA	ND	ND	ND	
Post LGAC TCE	ND	ND	ND	
Post LGAC PCE	ND	ND	ND	
Post LGAC Total Contaminants Concentration	249.0	214.9	24	

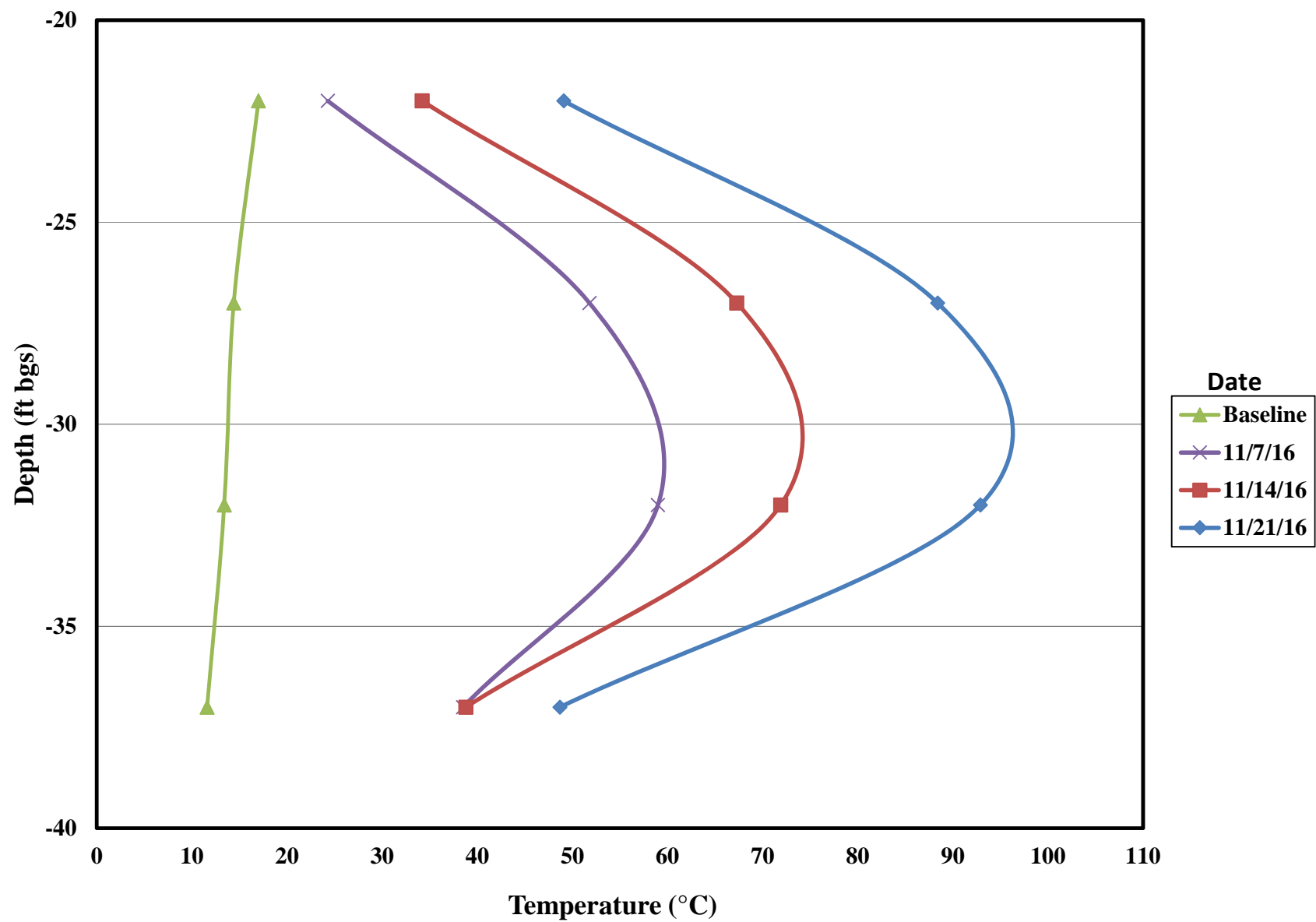
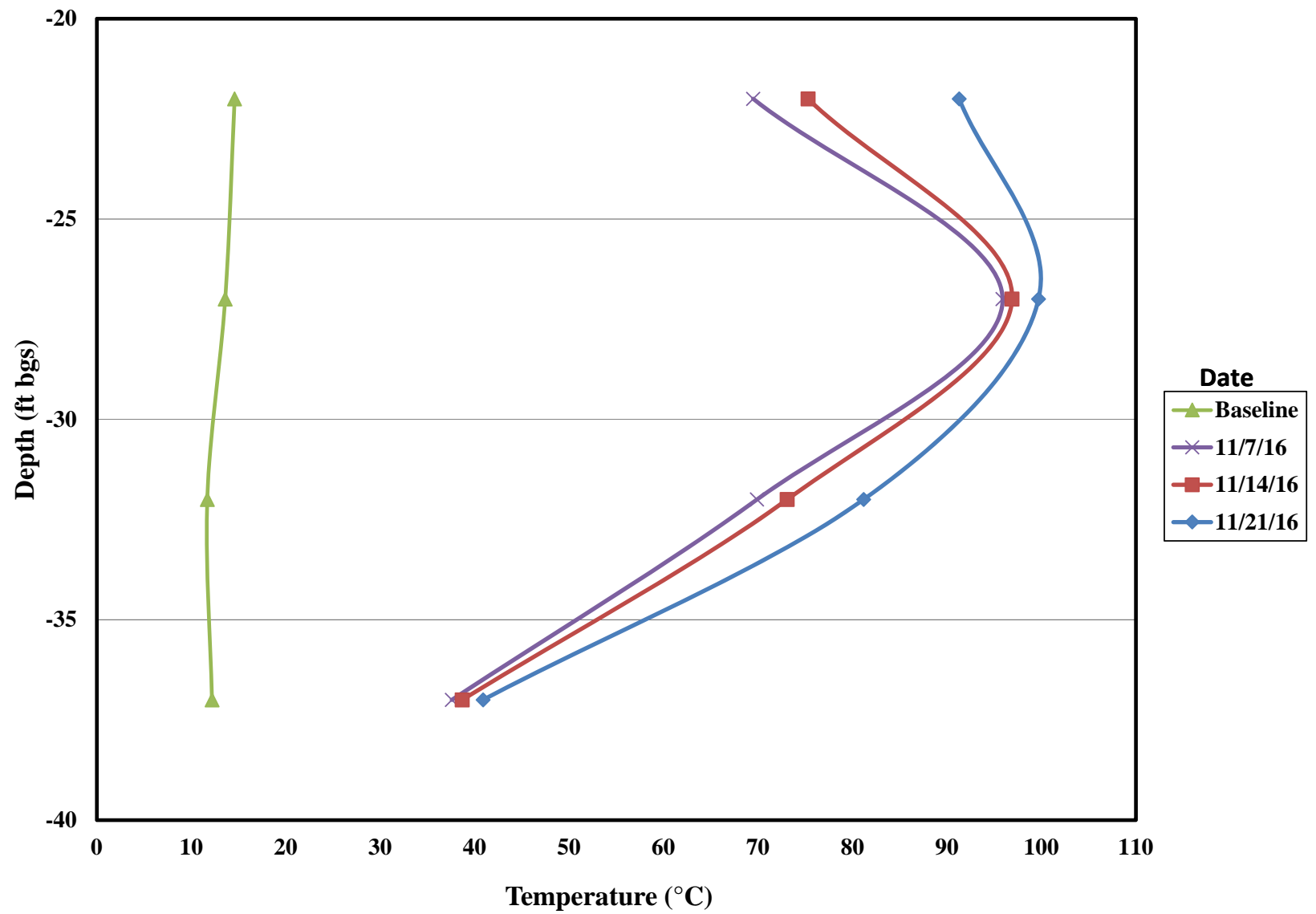


Figure 2a. TMP D3 Temperature vs. Depth



**Figure 2b.** TMP F4 Temperature vs. Depth

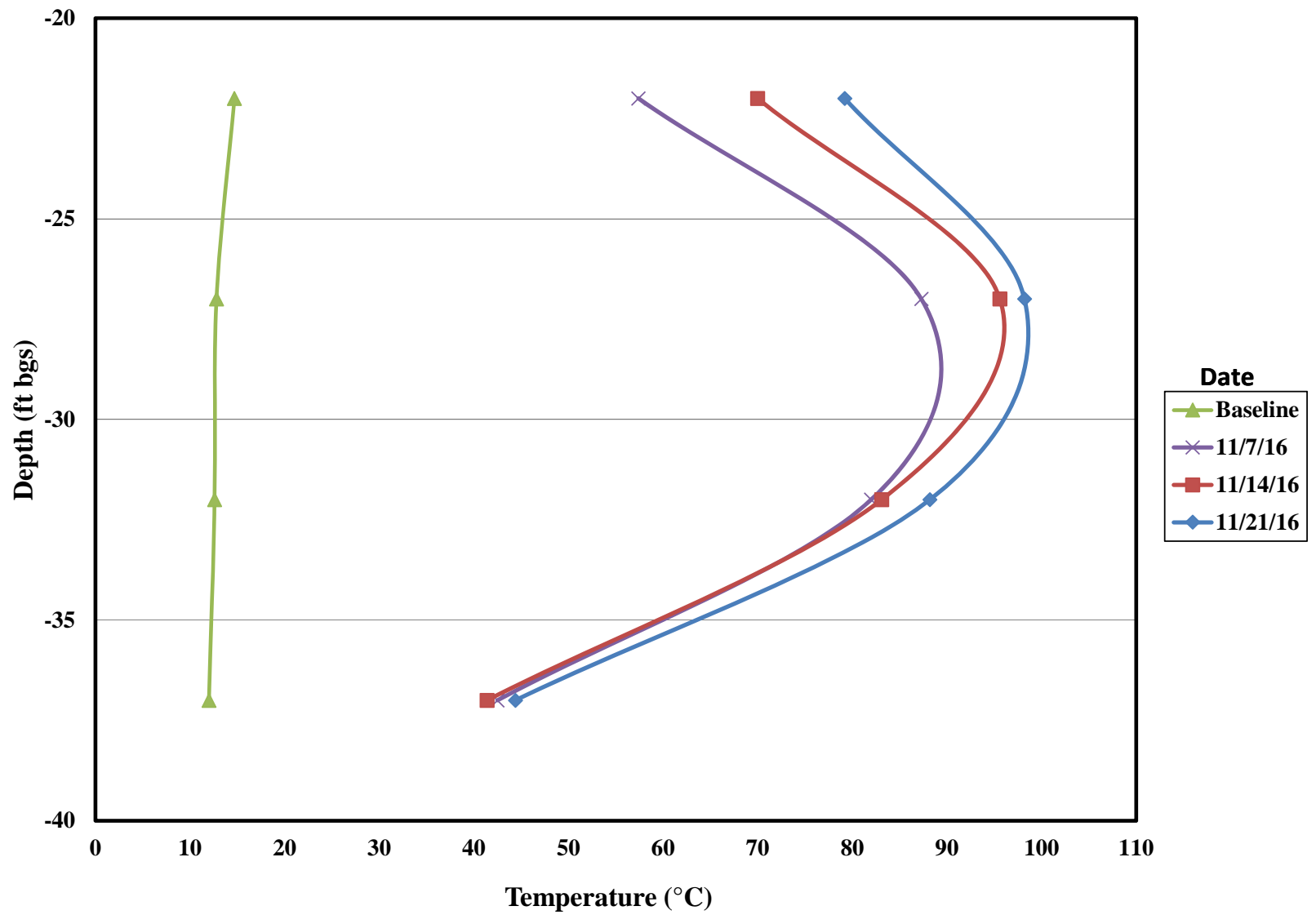


Figure 2c. TMP H3 Temperature vs. Depth



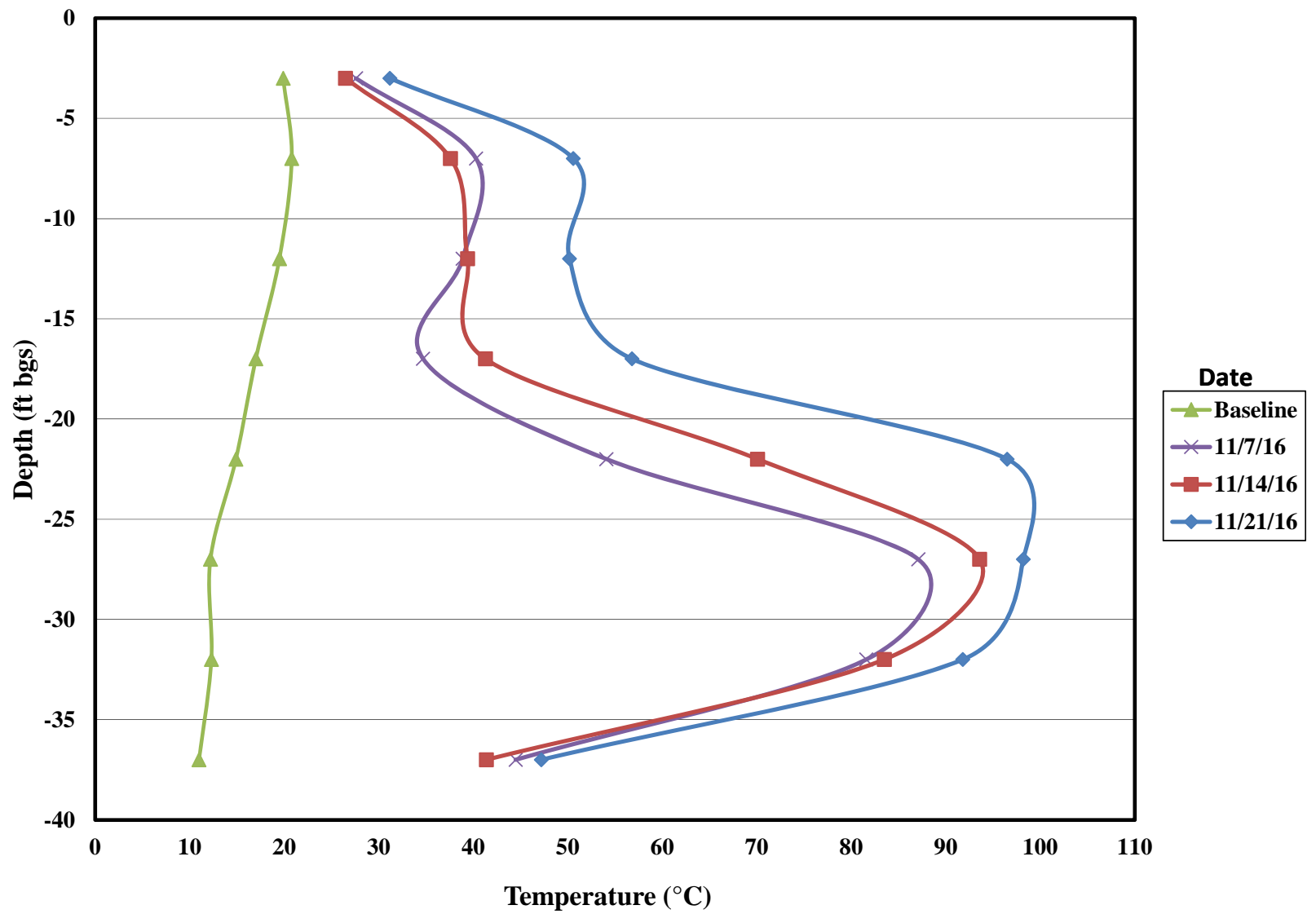
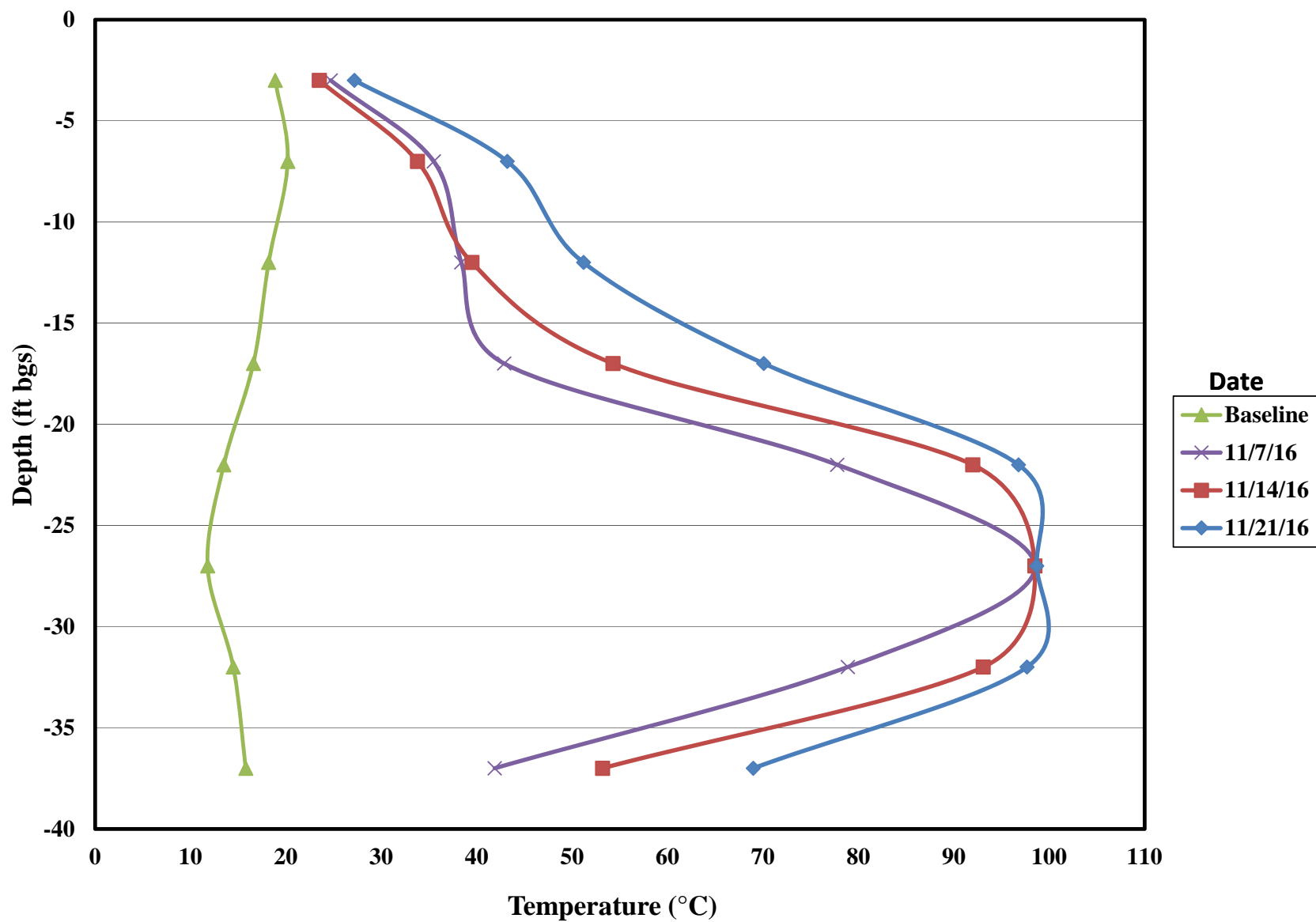


Figure 2d. TMP K4 Temperature vs. Depth



**Figure 2e.** TMP K5 Temperature vs. Depth

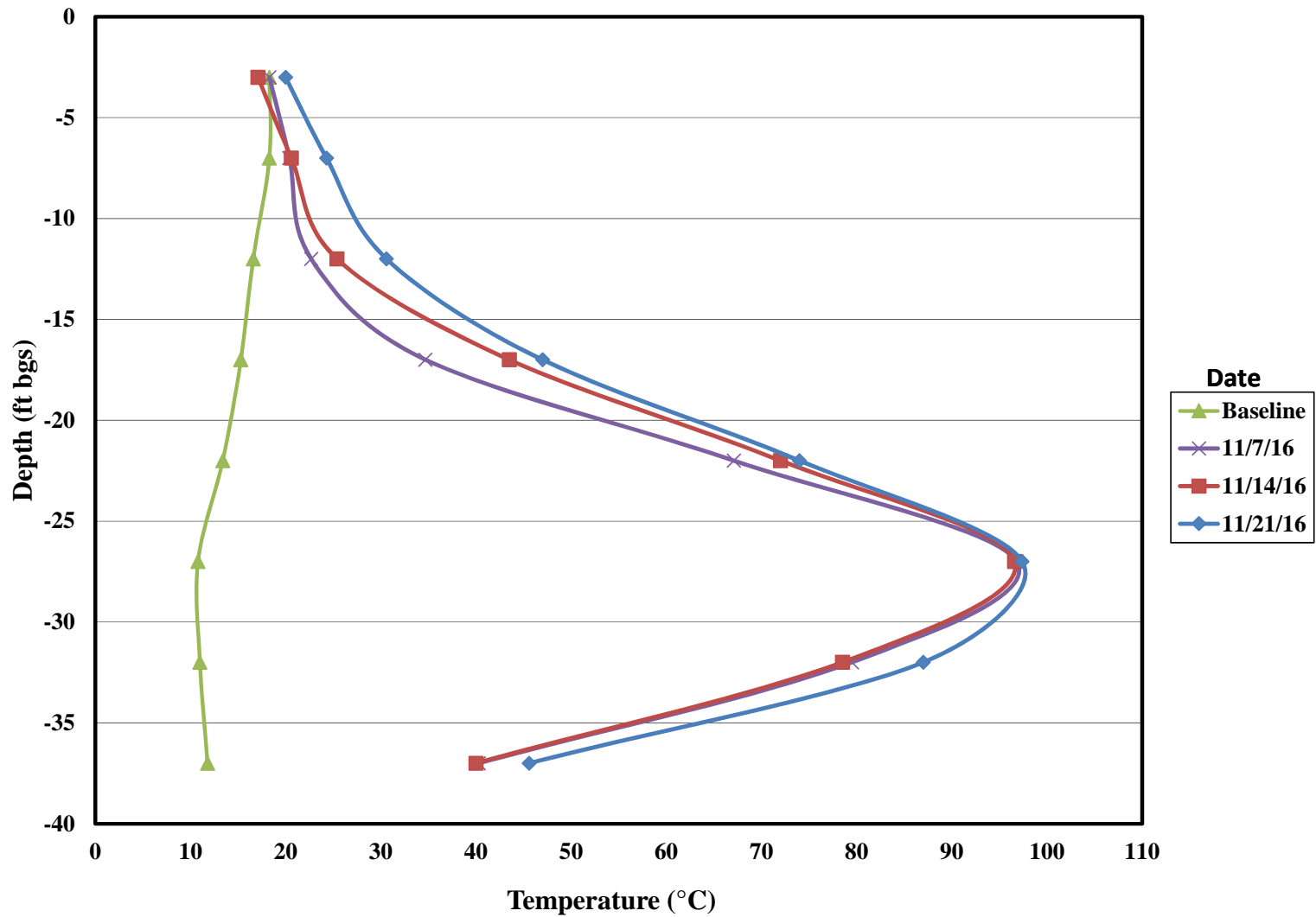


Figure 2f. TMP K7 Temperature vs. Depth

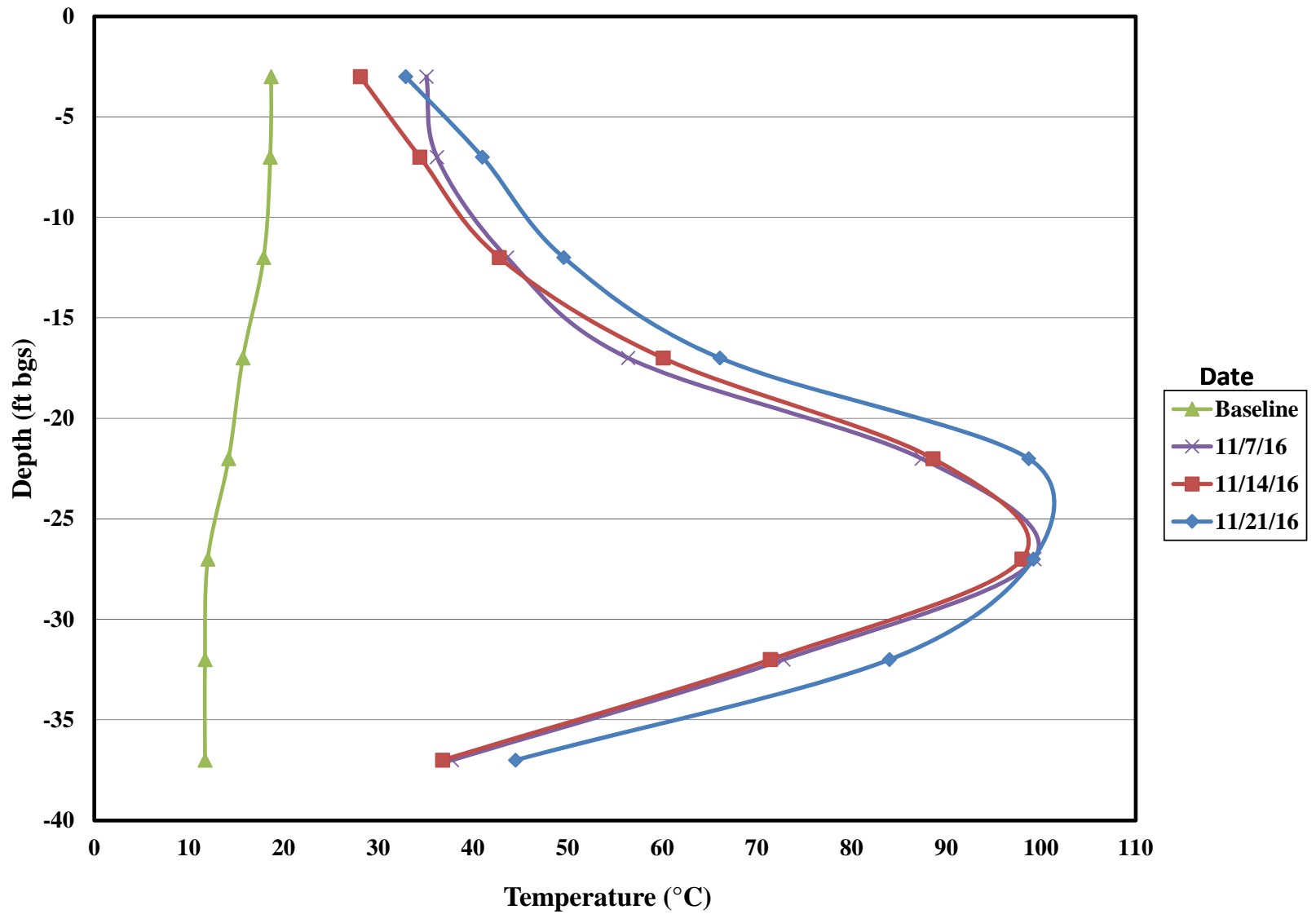
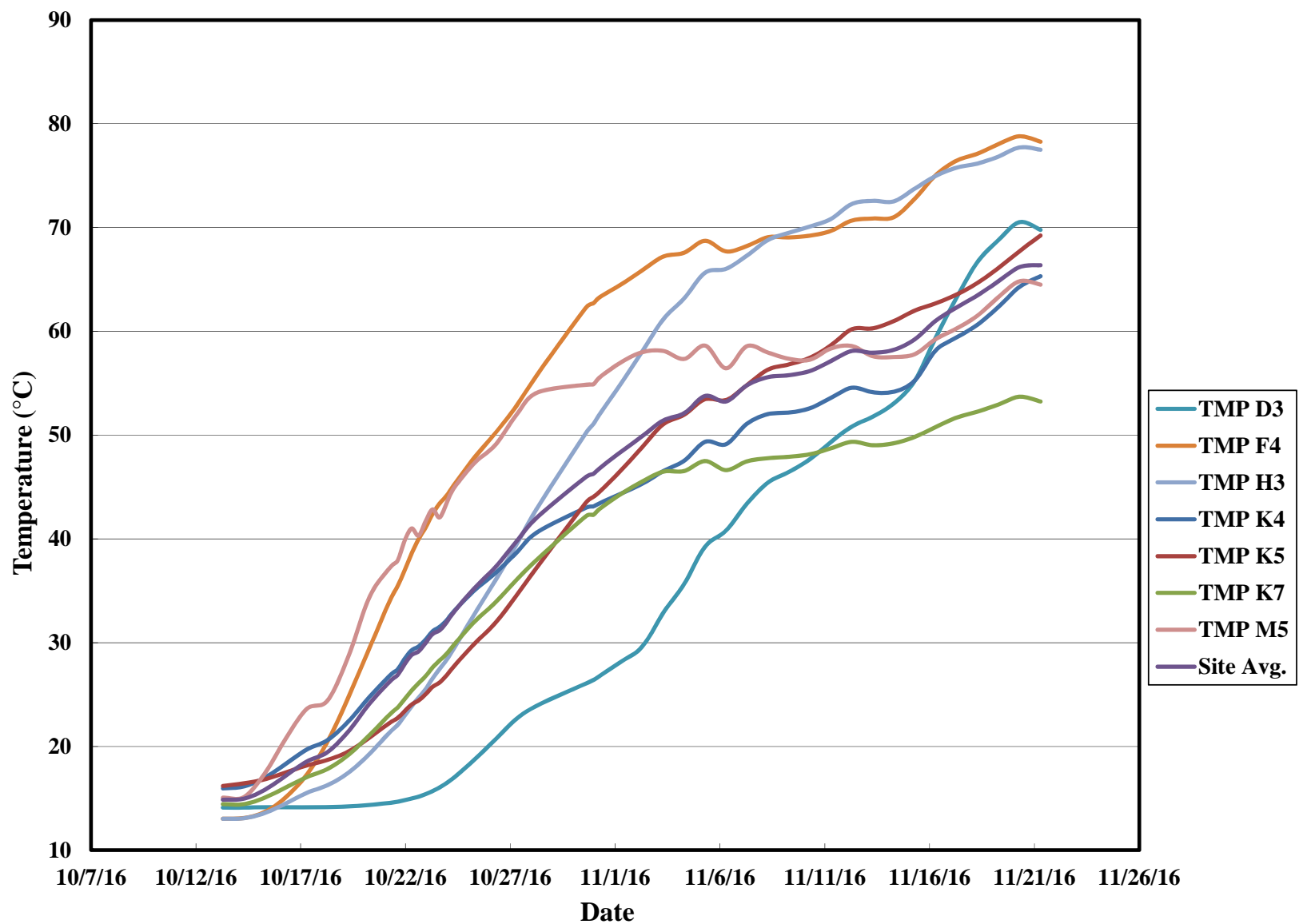


Figure 2g. TMP M5 Temperature vs. Depth





**Figure 3.** Subsurface Temperatures vs. Time

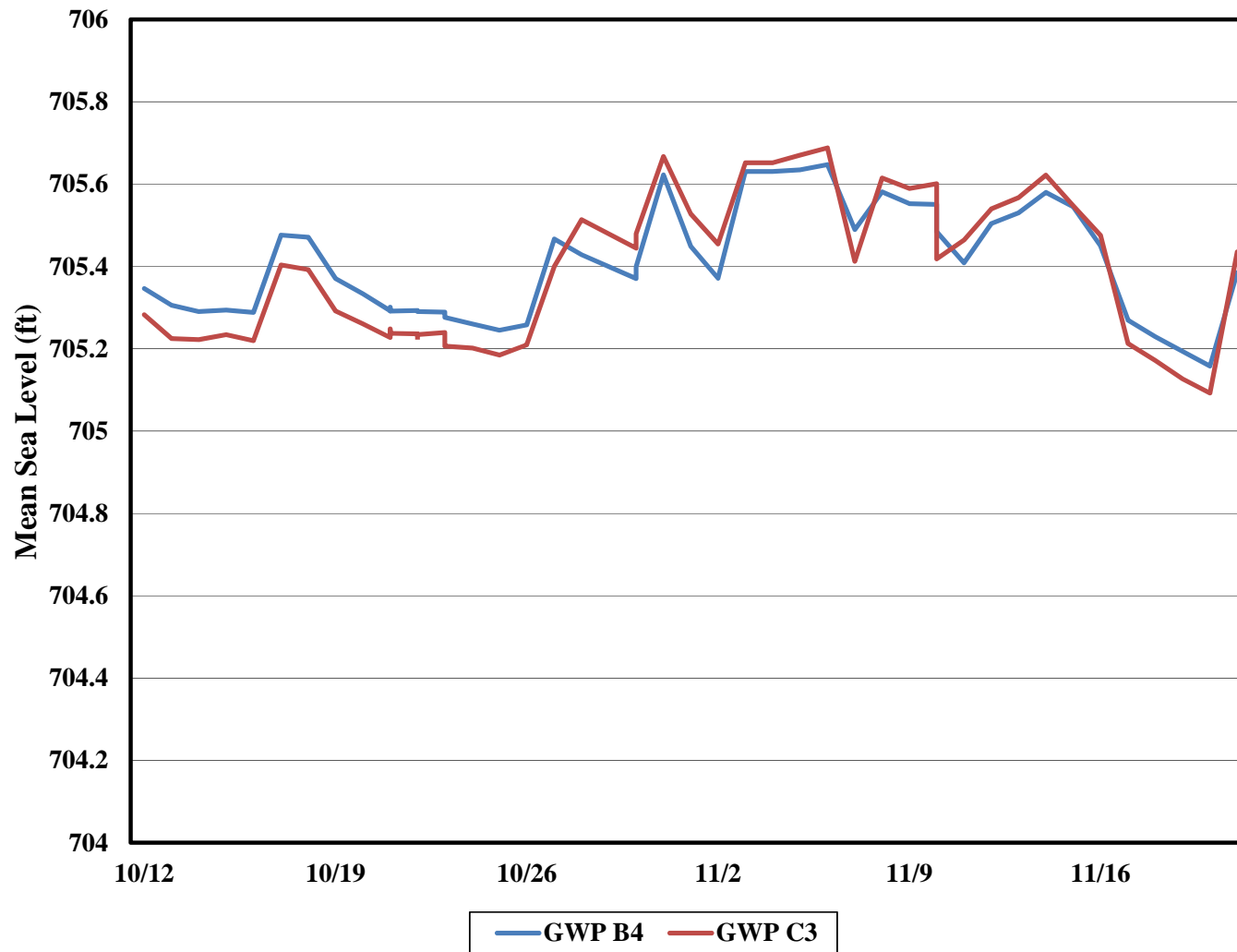
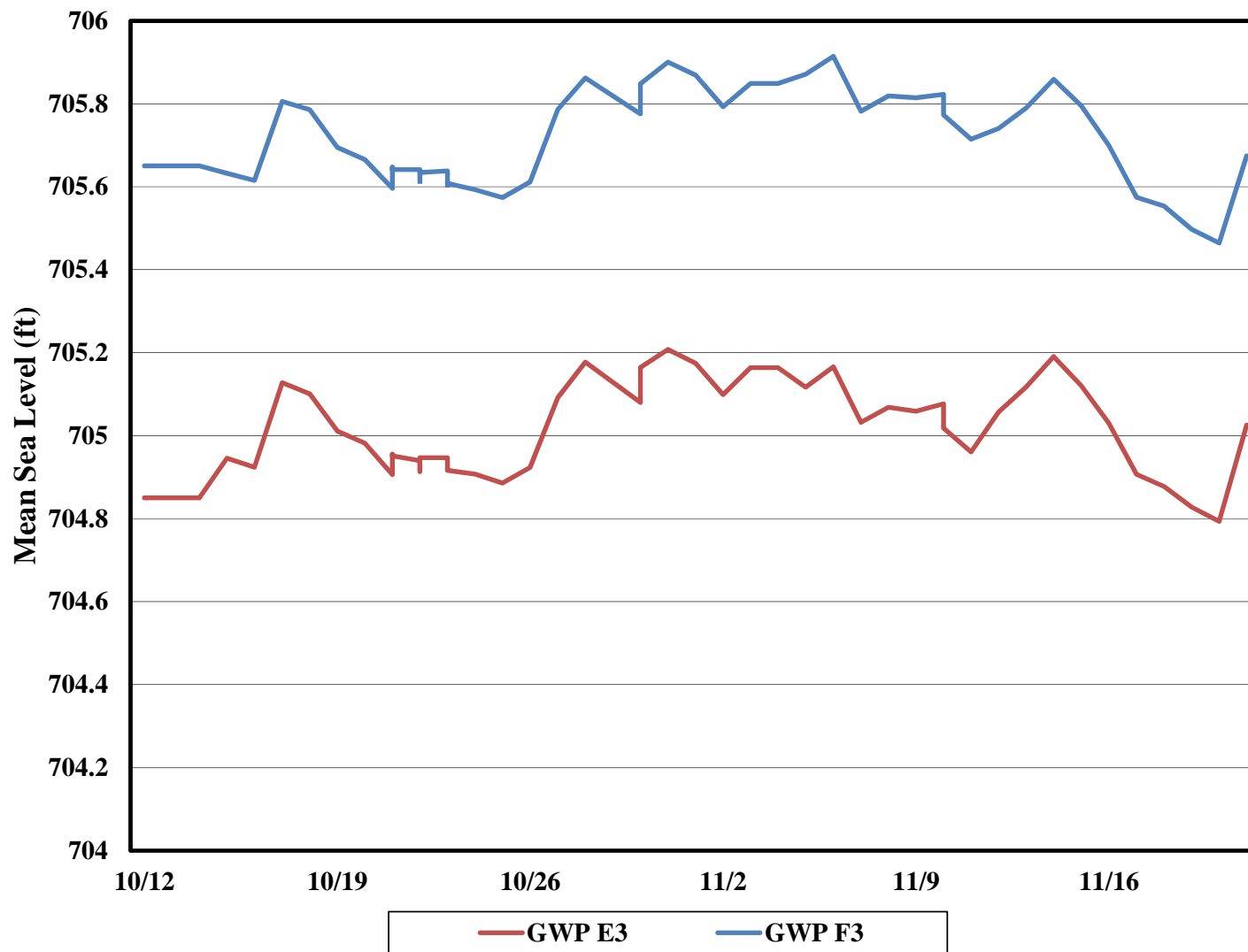


Figure 4a. GWP B4 and GWP C3



**Figure 4b.** GWP E3 and GWP F3

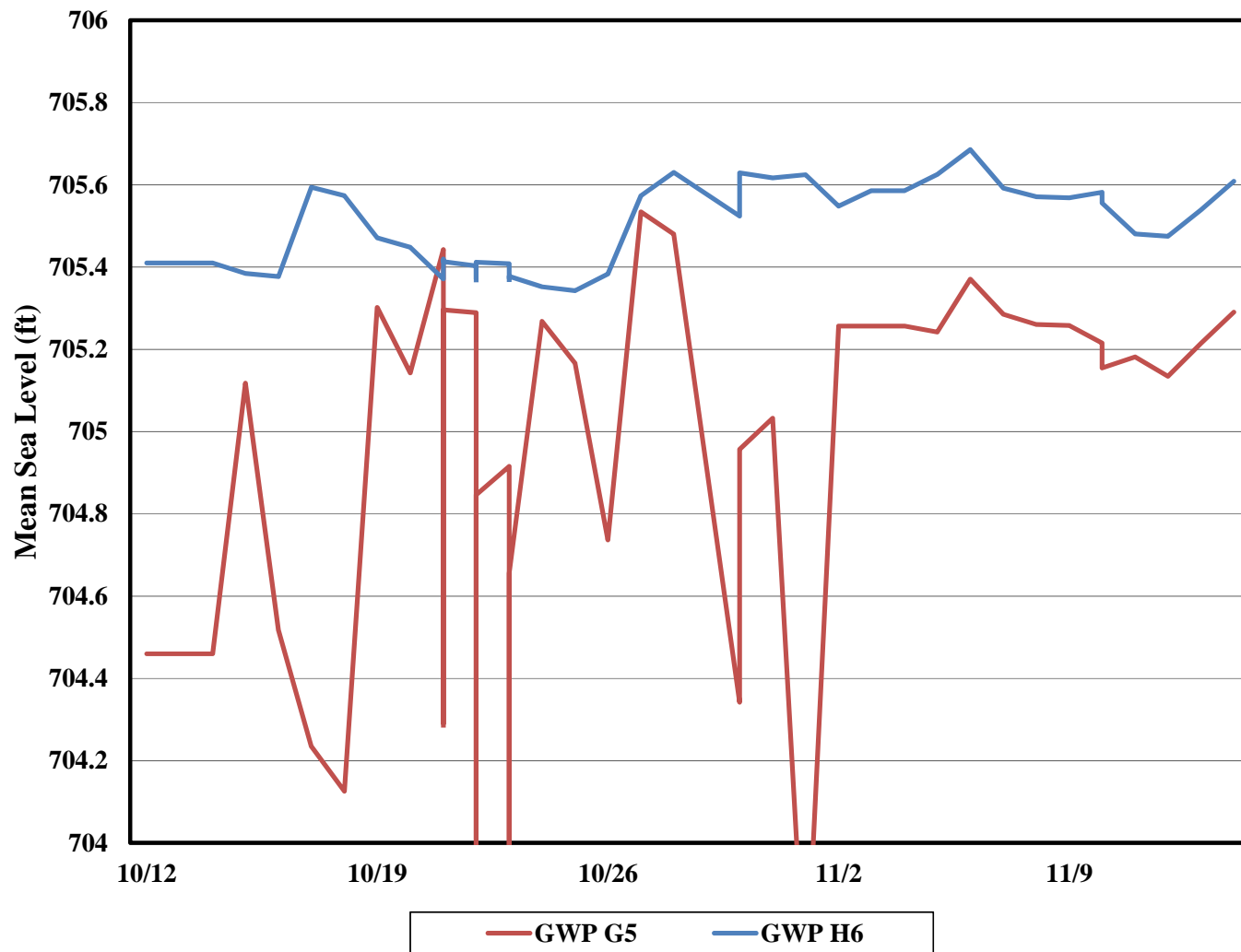


Figure 4c. GWP G5 and GWP H6



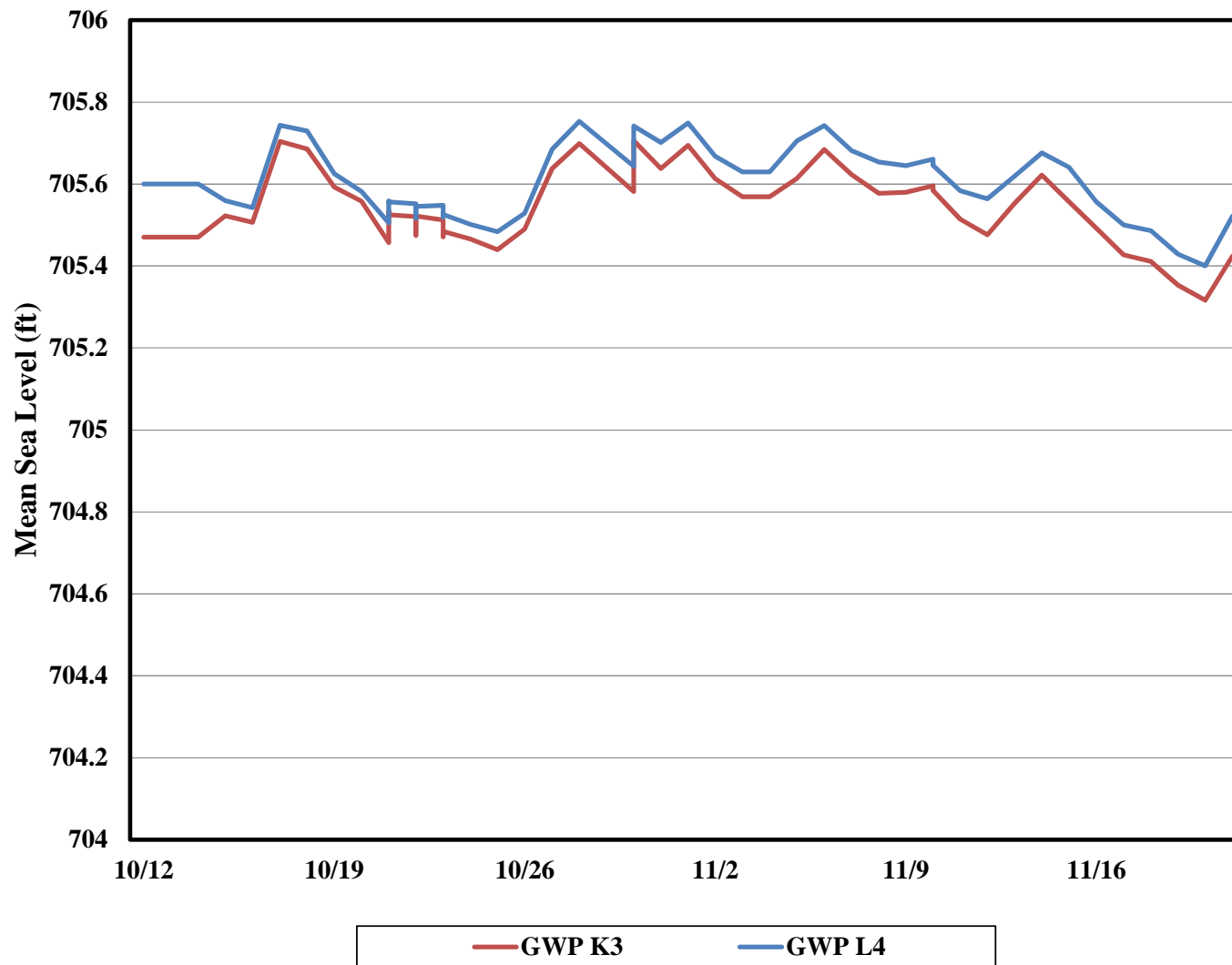
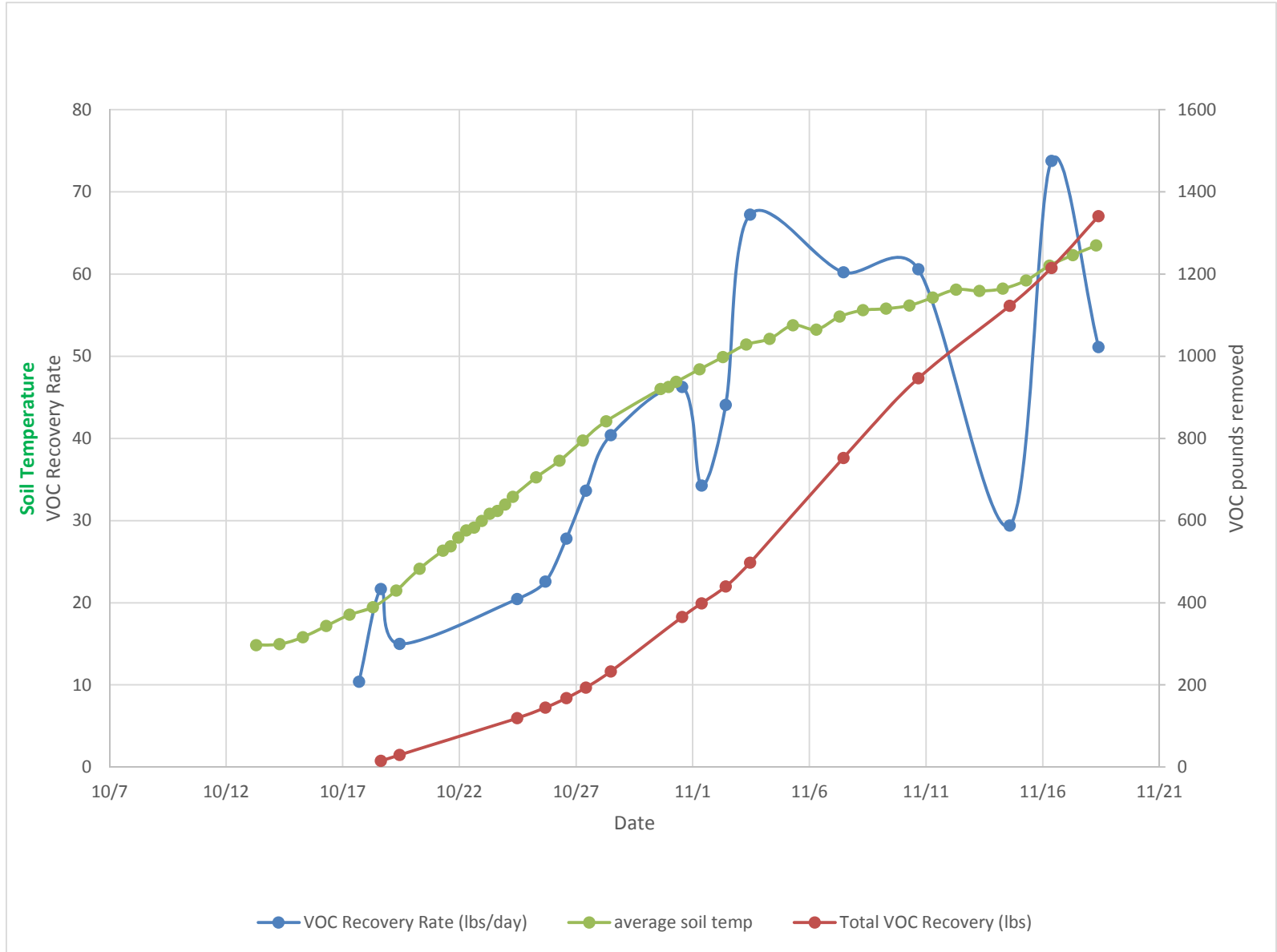


Figure 4c. GWP K3 and GWP L4



**Figure 5. ERH Performance**



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November 29, 2016

Mr. Brian Conrath  
Remedial Project Manager  
Illinois Environmental Protection Agency  
1021 N. Grand Ave. East  
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Brian.Conrath@Illinois.gov

**Subject: ERH Weekly Report**  
**November 21, 2016 to November 28, 2016**  
**Southeast Rockford Groundwater Contamination Site Area 4**  
**2630 Marshall Street, Rockford, Illinois.**

Dear Mr. Conrath,

This letter report contains a brief description of the Electrical Resistance Heating (ERH) remediation operations performed at 2630 Marshall Street, Rockford, Illinois (the Site). The time period addressed in this report is from November 21 to November 28, 2016.

### ERH Application Summary

The ERH system operational parameters through November 28, 2016 are presented below in **Table 1**.

**Table 1. Key ERH System Operational Parameters**

<b>ERH System Parameters</b>	<b>November 21</b>	<b>November 28</b>
Weekly Average Power (kW)	712	646
Cumulative Energy Applied (kWh)	444,700	553,700
Average Subsurface Temperature (°C)	66.4	73.2
Average Vapor System Flow Rate (scfm)	842	756
Duration of System Shutdown (approximate hours)	14	10
Discharge to GETS flow rate (gpm)	0.13	0.20
Total water discharged to GETS	17,986	19,966

The ERH system experienced two shut downs during the reporting period. The first shutdown occurred on the morning of Tuesday, November 22, 2016, at approximately 10:00 am and the shutdown was the result of a scheduled vapor phase carbon change out conducted by Evoqua Water Technologies. The system remained down for 8 hours while the change-out occurred. The second shut down occurred on the morning of Wednesday, November 23, 2016 at approximately 4:00 am and resulted from a high-water level alarm in the ERH condenser that was triggered by the shutdown of the groundwater extraction and treatment system (GETS). TRS responded to the shutdown alarm and were able to restart they system by discharging excess water to the 6,000-gallon process water storage tank. TRS restarted the ERH system and was fully operational by approximately 7:00 am. Aside from

these two system shutdowns, the PCU, vapor recovery, and vapor abatement systems operated within design parameters during the reporting period.

## **Temperatures**

The average subsurface temperature in the treatment area increased from 66.4 degrees Celsius (°C) to 73.2°C during the reporting period. The highest individual temperature measurement within the treatment volume was 100.2°C. This was recorded at TMP location F4 at 27-feet below ground surface (ft bgs).

To illustrate the temperature change, the data is presented in seven separate graphs based on TMP location. Temperatures relative to depth for each TMP are presented in **Figures 2a** through **2g**. Average subsurface temperature over time is presented in **Figure 3**.

## **Power and Energy**

The PCU averaged 646 kilowatts (kW) of applied power to the treatment volume during the reporting period. A total of 553,700 kilowatt-hours (kWh) of energy have been applied to the subsurface as of November 28, 2016.

## **ERH Vapor Recovery**

During this reporting period, the average vacuum applied to the subsurface was approximately 5.0 inches of mercury (in Hg). The vapor stream flow rate, as measured after the vapor recovery blower, averaged 756 standard cubic feet per minute (scfm).

Vapor samples are collected from the influent and effluent of the vapor-phase granular activated carbon (VGAC) system whenever TRS is onsite. Analysis is performed using a photoionization detector (PID) MiniRae 3000. In accordance with the Work Plan, vapor samples are also collected once per week during the first four weeks of operations and sent offsite for analysis by Method TO-15. The available results of the PID and TO-15 analysis can be found in the attached **Table 3**, **Table 4** and **Table 5**. The PID readings and TO-15 data confirm that the VGAC system is performing as designed and operating in accordance with the substantive discharge requirements. Based on PID readings, TRS estimates that approximately 1,535 pounds of volatile organic compounds (VOCs) have been removed from the treatment volume.

## **ERH Process Water**

During this reporting period, the ERH system discharged 1,980 gallons to the GETS system at an average rate of 0.20 gallons per minute (gpm). The water recovered by the ERH system is passed through a particulate filter, two liquid-phase granular activated carbon (LGAC) vessels prior to discharge to the GETS system. The water recovered and treated with LGAC prior to being sent to the GETS system is now being analyzed twice per month by an offsite laboratory. The results of these analyses are provided in **Table 6**. The LGAC system has been working as designed.

## **Groundwater and Vacuum Piezometers**

TRS collects vacuum piezometer readings at least once a week while onsite to illustrate full vacuum influence across the Site. The readings collected through the reporting period are presented in **Table 2**.



**Table 2. Site VP Readings (inches water column)**

Date/Time	VP-B4	VP-C2	VP-D4	VP-G4	VP-K5	VP-L4	VP-L7	VP-M6
10/14/16	1.0	1.0	3.0	8.0	8.5	3.0	3.0	4.0
10/18/16	1.5	1.5	4.0	8.8	8.0	3.0	3.3	3.5
10/24/16	1.5	1.5	3.5	5.5	6.5	2.5	3.0	3.0
11/2/16	1.5	1.5	4.0	5.0	6.5	2.5	3.0	3.5
11/10/16	1.0	1.0	4.5	5.0	7.0	2.5	2.5	3.5
11/15/16	1.0	1.0	4.0	4.5	7.0	3.0	2.5	3.0
11/21/16	1.5	1.5	3.5	5.0	6.5	3.0	3.0	3.0

In addition to the vacuum piezometer readings, TRS also collects groundwater elevation measurement readings daily through automated data collection. The groundwater elevation readings are presented graphically in **Figures 4a** through **4d**. As the readings show, there are fluctuations occurring within the piezometers, but the changes are consistent inside and outside the treatment volume, indicating hydraulic control.

Please note that the GWP readings have been adjusted slightly to account for the thermal expansion of GWP cable. Accordingly the greatest change as a result of this effect is seen at GWP B4 as its cable travels has the longest run and also has the most amount of cable below grade and within a conduit.

The GETS system operated with ground water pumping well EW3 online during this operational period, recovering about 30 gpm from the well. EW3 is located in the middle of the treatment volume, on Marshall Street.

### **Planned Activities**

TRS personnel will visit the Site the week of November 28, 2016, to collect operations data, optimize the system, and perform weekly system maintenance. Based on remediation progress and percent energy input, TRS is working on scheduling the first soil sampling event for the week of December 12, 2016, based on the availability of the drilling subcontractor Terra Probe Environmental.

Should you have any questions concerning this report, or if you would like any additional information, please contact either me or Chris Thomas by phone at (360) 560-7551 and (847) 376-3691, respectively.

Sincerely,  
TRS Group, Inc.



Bradley Morris  
Project Manager

Attachments: Table 3, 4, 5 - Vapor Concentrations  
Table 6 – LGAC performance  
Figure 1 – Site Plan  
Figure 2a – TMP D3 Temperature vs. Depth  
Figure 2b – TMP F4 Temperature vs. Depth  
Figure 2c – TMP H3 Temperature vs. Depth  
Figure 2d – TMP K4 Temperature vs. Depth  
Figure 2e – TMP K5 Temperature vs. Depth  
Figure 2f – TMP K7 Temperature vs. Depth  
Figure 2g – TMP M5 Temperature vs. Depth  
Figure 3 – Subsurface Temperatures vs. Time  
Figure 4a – GWP B4 and C3  
Figure 4b – GWP E3 and F3  
Figure 4c – GWP G5 and H6  
Figure 4d – GWP K3 and L4  
Figure 5 – ERH Performance

cc/att: Chris Thomas, TRS  
Tim Warner, TRS

## Attachments





Table 3 – Vapor Influent and Effluent PID Monitoring Results

Date	Blower Effluent Flow Rate (scfm)	PID Based Influent Conc (ppm)	PID Based Effluent Conc (ppm)	PID based VOC Recovery Rate (lbs/day)	PID based Total VOC Recovery (lbs)	PID based VOC Discharge Rate (lbs/day)	PID based Total VOC Discharged (lbs)	Lab Based Total VOC Recovery Rate (lbs/day)
10/17/16	830	25.6	0.0	10.4	0.0	0.0	0.0	
10/18/16	830	53.4	0.0	21.7	15.0	0.0	0.0	8.1
10/19/16	830	37.0	0.0	15.0	29.7	0.0	0.0	
10/24/16	834	50.2	0.0	20.5	119	0.0	0.0	
10/25/16	837	55.2	0.0	22.6	145	0.0	0.0	46.5
10/26/16	839	67.9	0.0	27.8	168	0.0	0.0	
10/27/16	850	81.0	0.0	33.6	193	0.0	0.0	
10/28/16	861	96.0	1.0	40.4	233	0.4	0.2	
10/31/16	860	110.0	3.0	46.2	365	1.3	2.8	
11/1/16	845	83.0	8.0	34.3	399	3.3	4.7	56.0
11/2/16	859	105.0	7.0	44.1	440	2.9	7.9	
11/3/16	860	160.0	15.0	67.2	497	6.3	12.8	
11/7/16	860	143.3	52.3	60.2	752	22.0	69.3	61.9
11/10/16	869	142.7	45.1	60.6	946	19.1	135	
11/14/16	860	70.0	53.0	29.4	1,122	22.3	216	
11/16/16	878	172.0	92.0	73.8	1,215	39.5	272	
11/18/16	824	127.0	82.0	51.1	1,341	33.0	345	
11/23/16	225	200	0.0	22.0	1,535	0.0	433	

Table 4 – TO 15 Influent to VGAC

Date	1,1,1 TCA (ug/m3)	1,1 DCE (ug/m3)	1,1 DCA (ug/m3)	Other 8260 (ug/m3)	Other as Decane (ug/m3)	Total VOCs (ug/m3)	Total VOC Recovery Rate (lbs/day)
10/18/16	100,000	280	3,400	5,450	NS	109,130	8
10/25/16	50,000	7,200	1,700	6,900	469,690	620,095	47
11/1/16	53,000	29,000	430	23,670	633,670	739,770	56
11/7/16	13,000	16,000	2,800	21,625	749,022	802,447	62

Table 5 – TO 15 Effluent from VGAC

Date	1,1,1 TCA Conc. (ug/m3)	1,1 DCE Conc. (ug/m3)	1,1 DCA Conc. (ug/m3)	Other 8260 (ug/m3)	Other as Decane (ug/m3)	Total VOCs (ug/m3)	Total VOC Discharge Rate (lbs/day)
10/18/16	47	ND	ND	410	NS	457	0
10/25/16	5,200	110	430	17	NS	5,757	0
11/1/16	72,000	8,300	ND	ND	NS	80,300	6
11/7/16	100,000	15,000	5,800	1,370	NS	122,170	9

Table 6-LGAC and GETS discharge data

	10/18/16	10/25/16	11/1/16	11/7/16
Temperature (F)	75	80	85	84
pH	8.1	8.0	8.6	9
Pre LGAC Carbon Tetrachloride	ND	ND	ND	ND
Pre LGAC DCE	ND	8.4	17	15.0
Pre LGAC 1,1,1 - TCA	47	110	69	24
Pre LGAC 1,1,2 - TCA	0	1.5	2	2
Pre LGAC TCE	ND	1.1	1	0,72
Pre LGAC PCE	ND	ND	ND	1
Pre LGAC Total Contaminants Concentration	248	457	300	1,014
Mid LGAC Carbon Tetrachloride	ND	ND	ND	LGAC off
Mid LGAC DCE	ND	ND	ND	
Mid LGAC 1,1,1 - TCA	ND	ND	ND	
Mid LGAC 1,1,2 - TCA	ND	ND	ND	
Mid LGAC TCE	ND	ND	ND	
Mid LGAC PCE	ND	ND	ND	
Mid LGAC Total Contaminants Concentration	191	193	0	
Post LGAC Carbon Tetrachloride	ND	ND	ND	LGAC off
Post LGAC DCE	ND	ND	ND	
Post LGAC 1,1,1 - TCA	ND	ND	ND	
Post LGAC 1,1,2 - TCA	ND	ND	ND	
Post LGAC TCE	ND	ND	ND	
Post LGAC PCE	ND	ND	ND	
Post LGAC Total Contaminants Concentration	249.0	214.9	24	



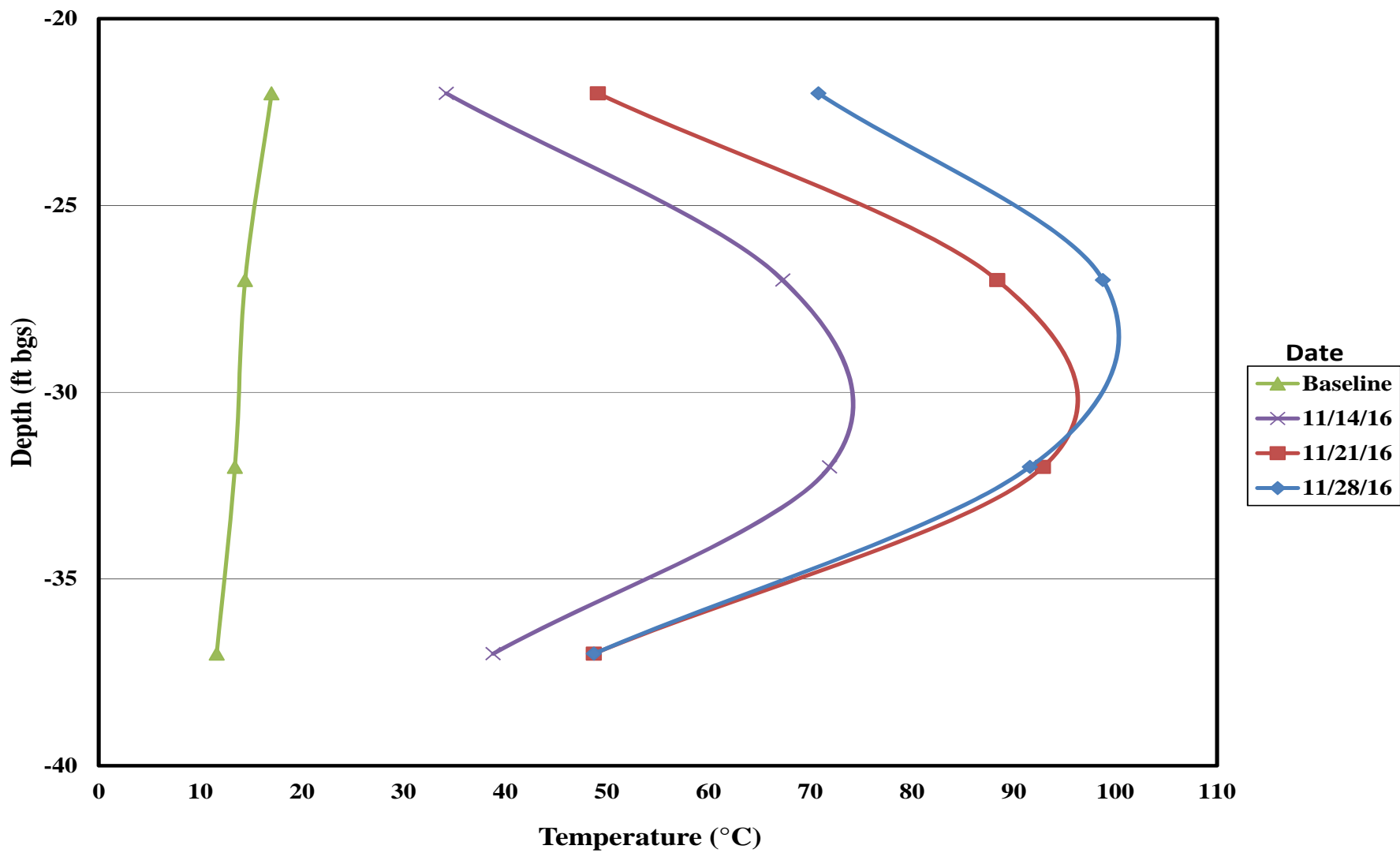
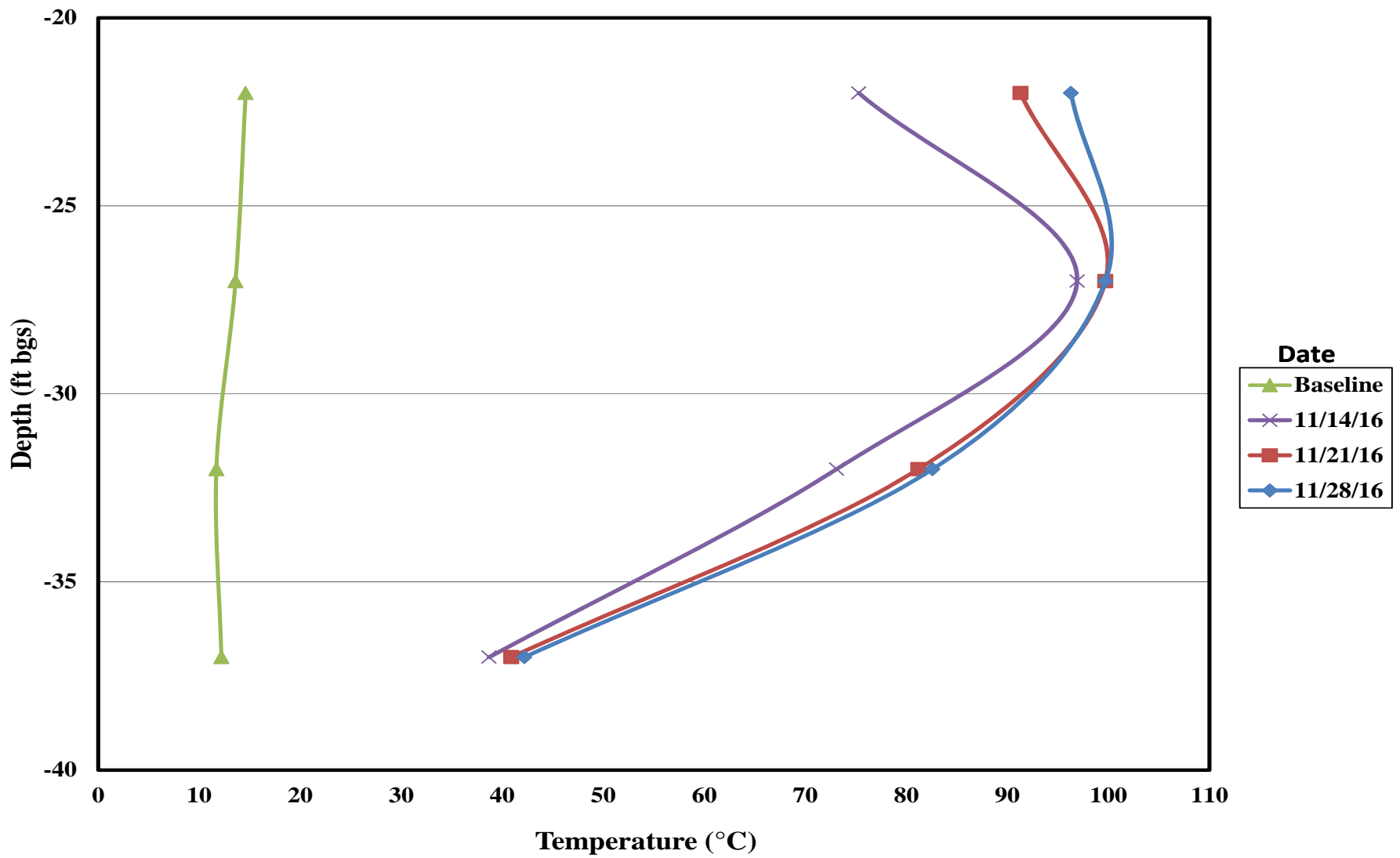
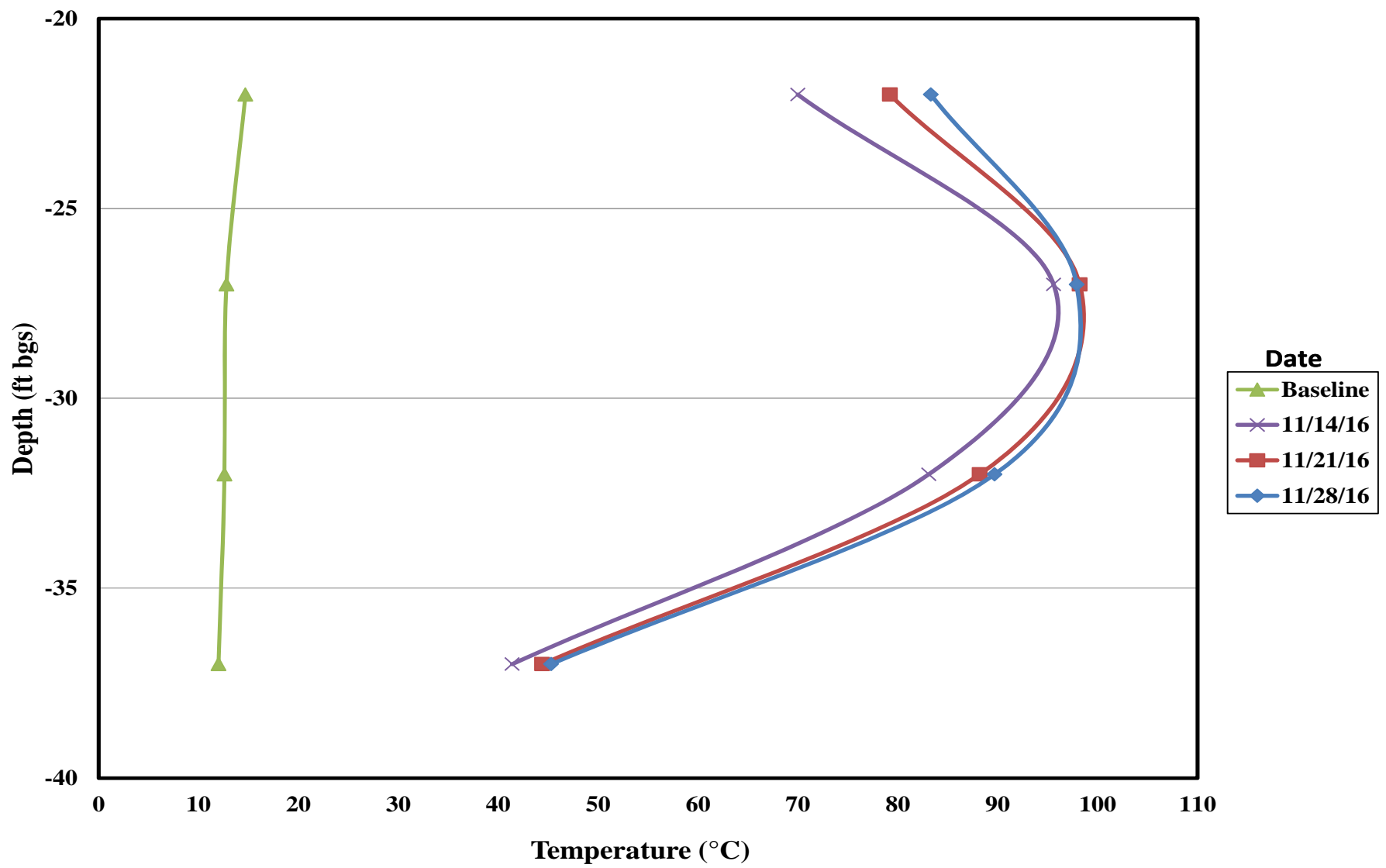


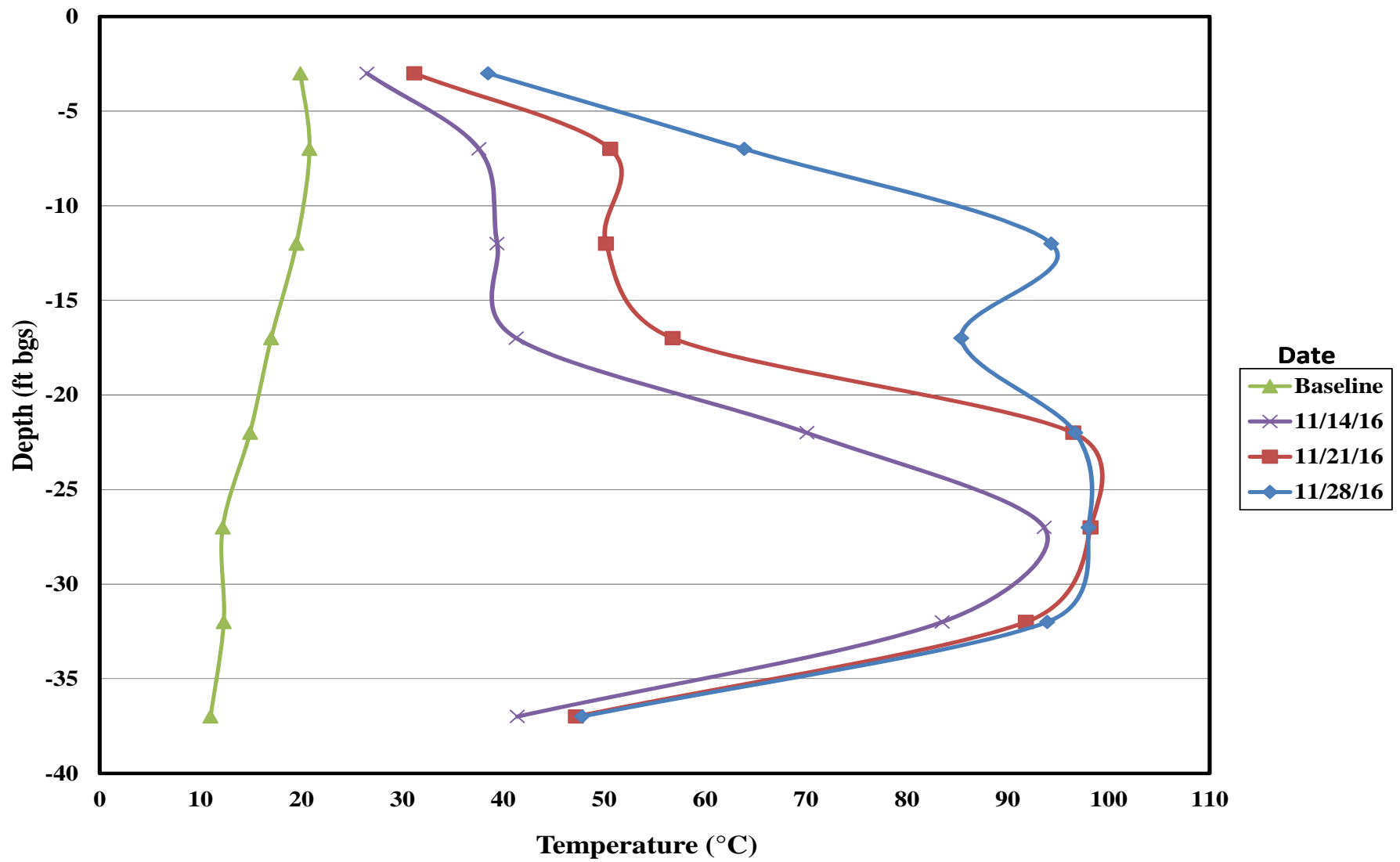
Figure 2a. TMP D3 Temperature vs. Depth



**Figure 2b.** TMP F4 Temperature vs. Depth



**Figure 2c.** TMP H3 Temperature vs. Depth



**Figure 2d.** TMP K4 Temperature vs. Depth



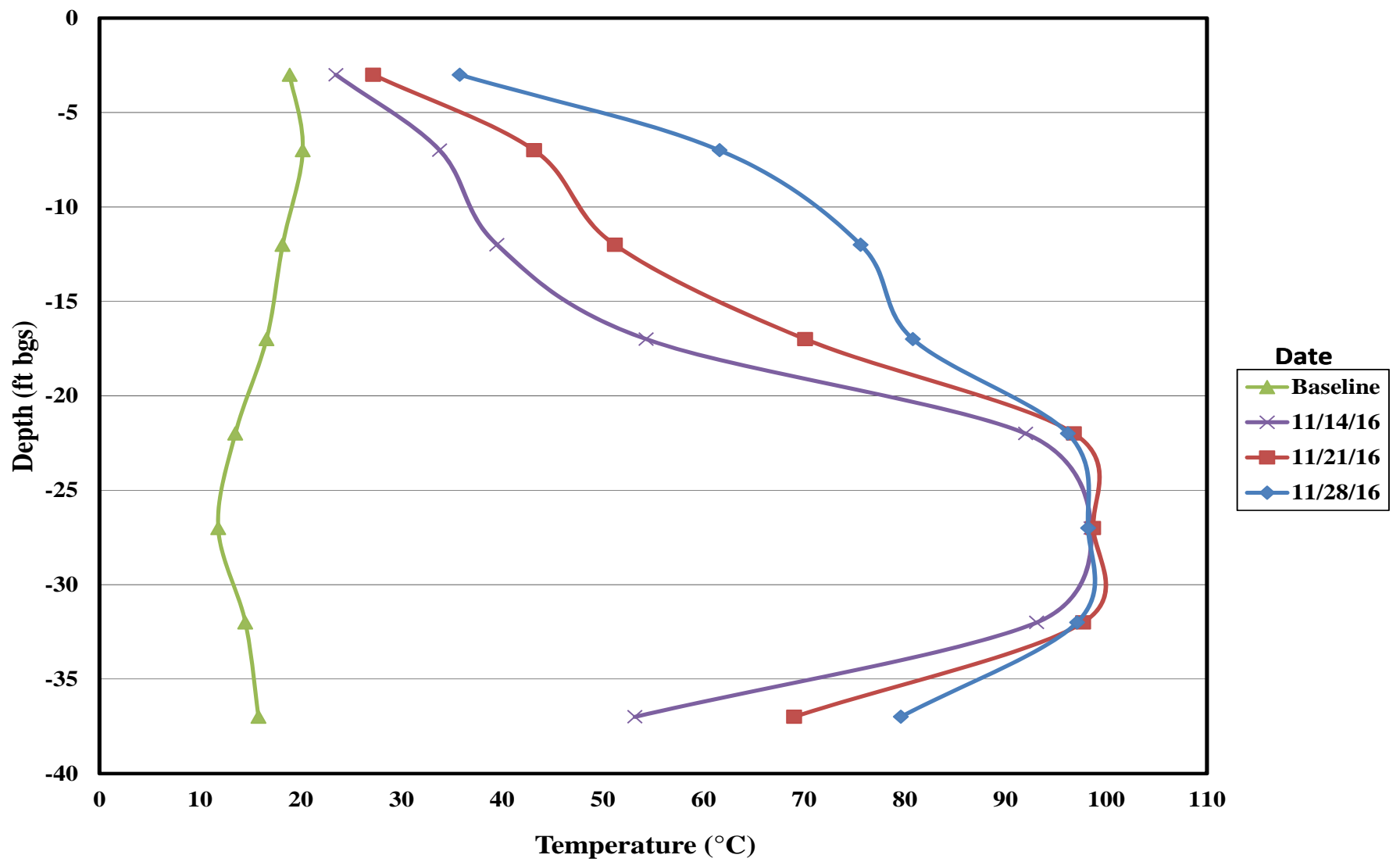


Figure 2e. TMP K5 Temperature vs. Depth

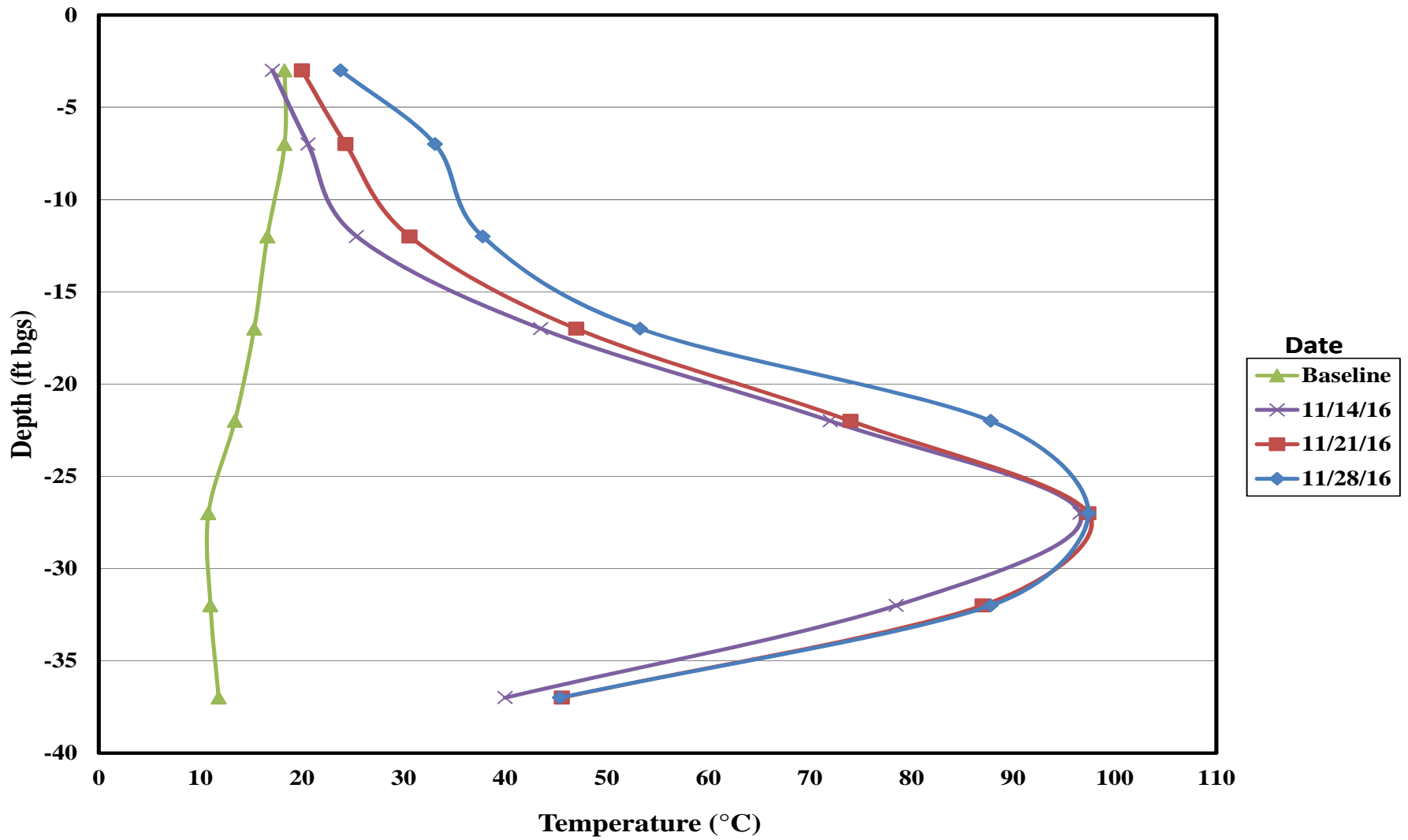
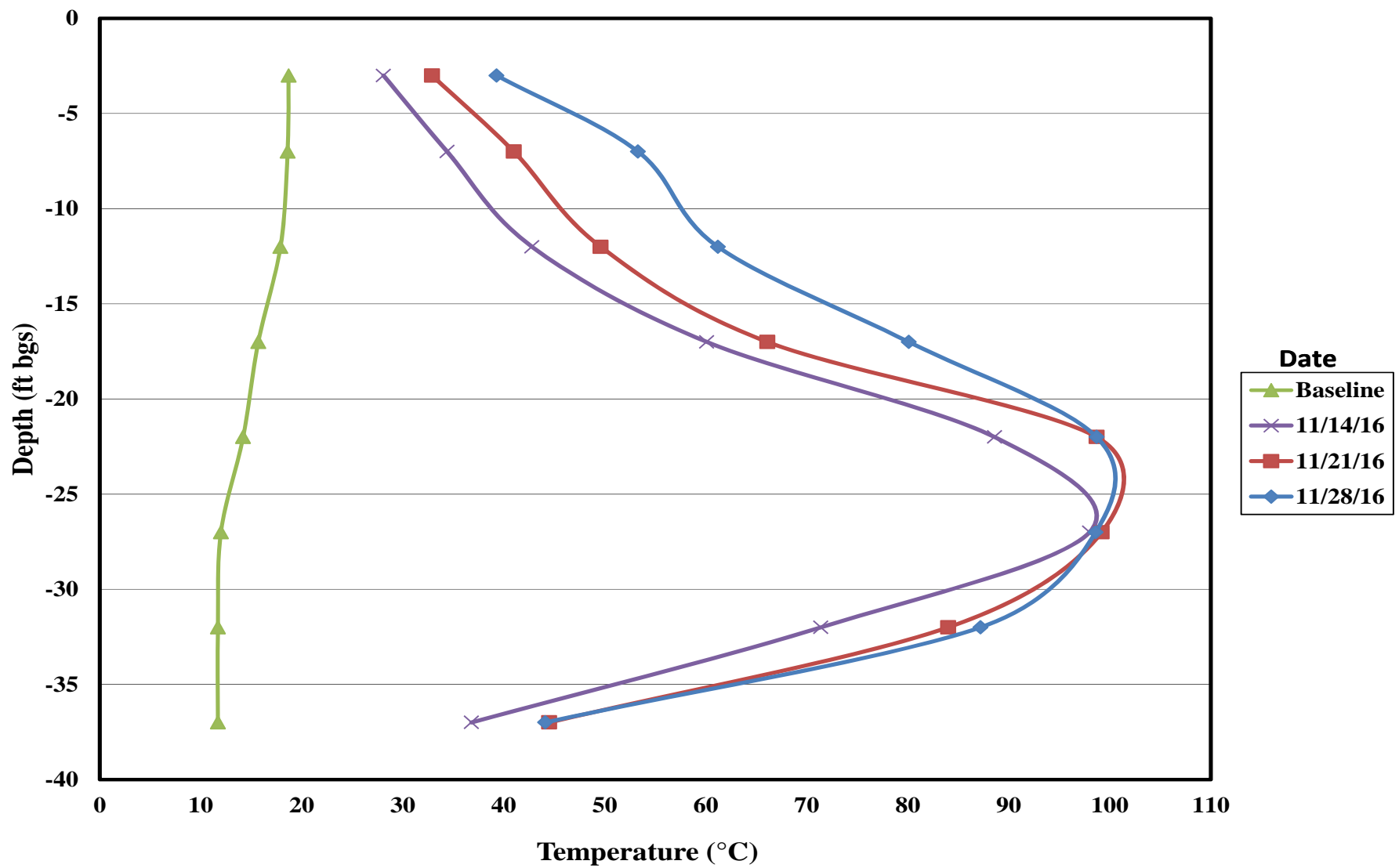
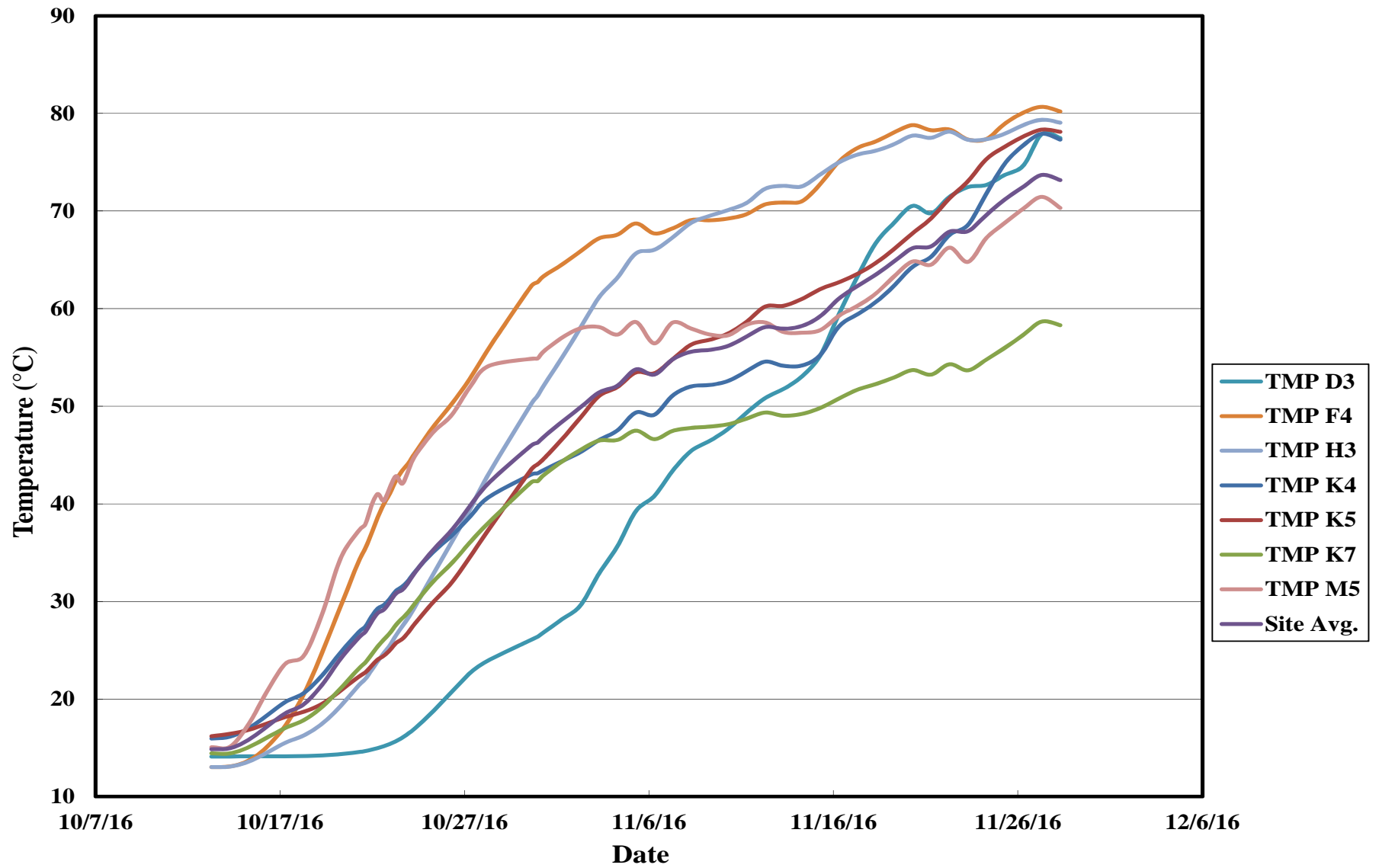


Figure 2f. Tmp K7 Temperature vs. Depth



**Figure 2g.** TMP M5 Temperature vs. Depth



**Figure 3.** Subsurface Temperatures vs. Time



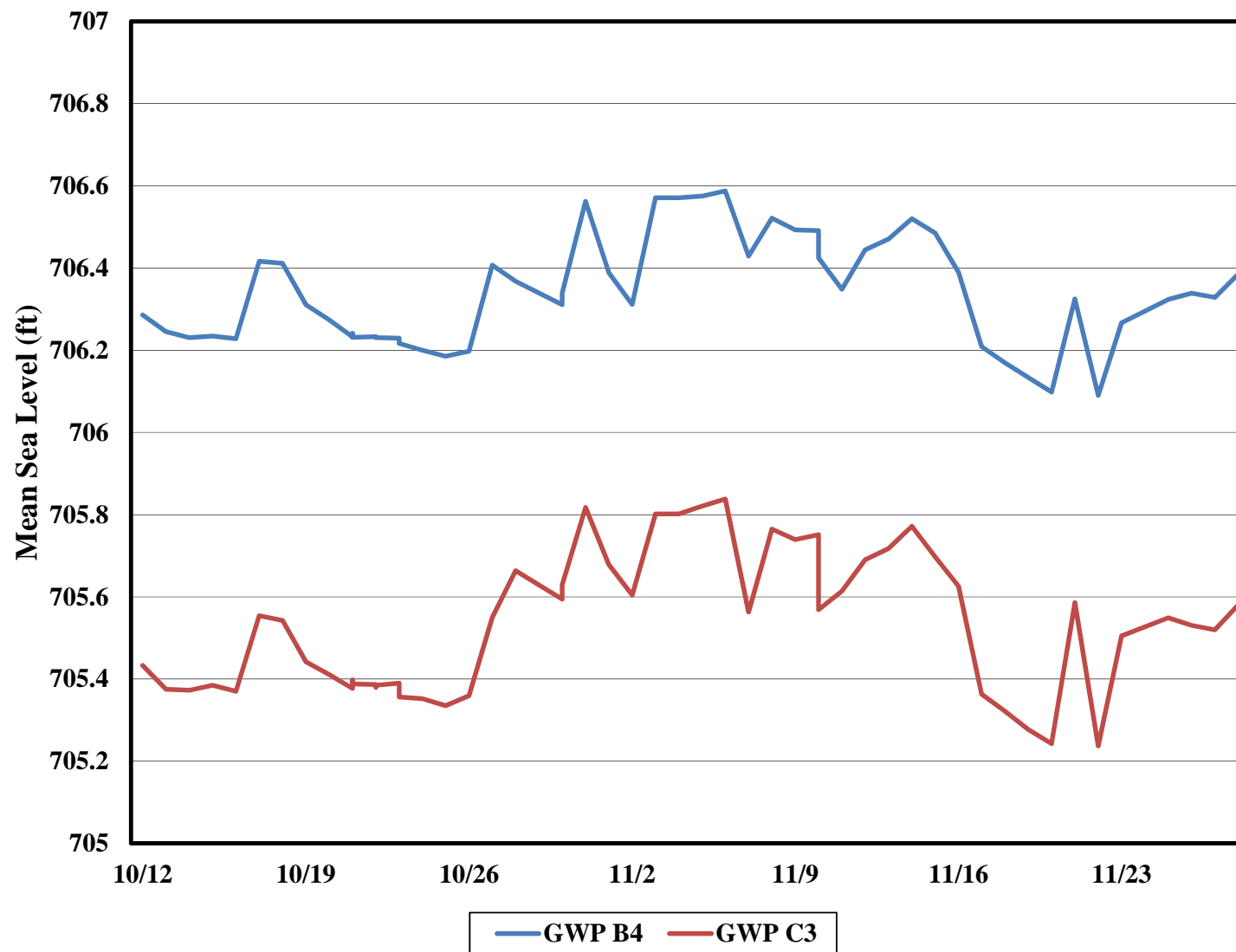
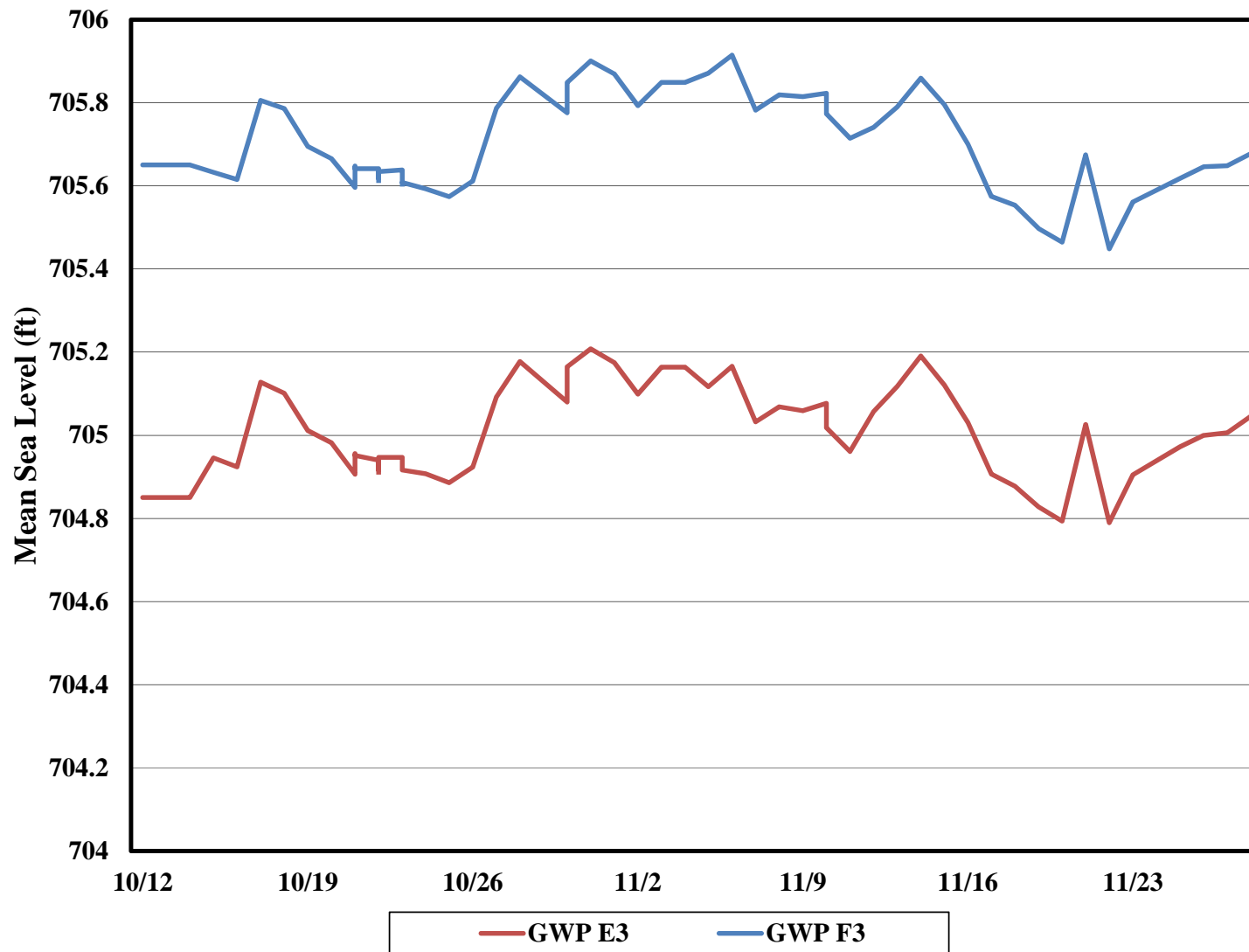


Figure 4a. GWP B4 and GWP C3



**Figure 4b.** GWP E3 and GWP F3

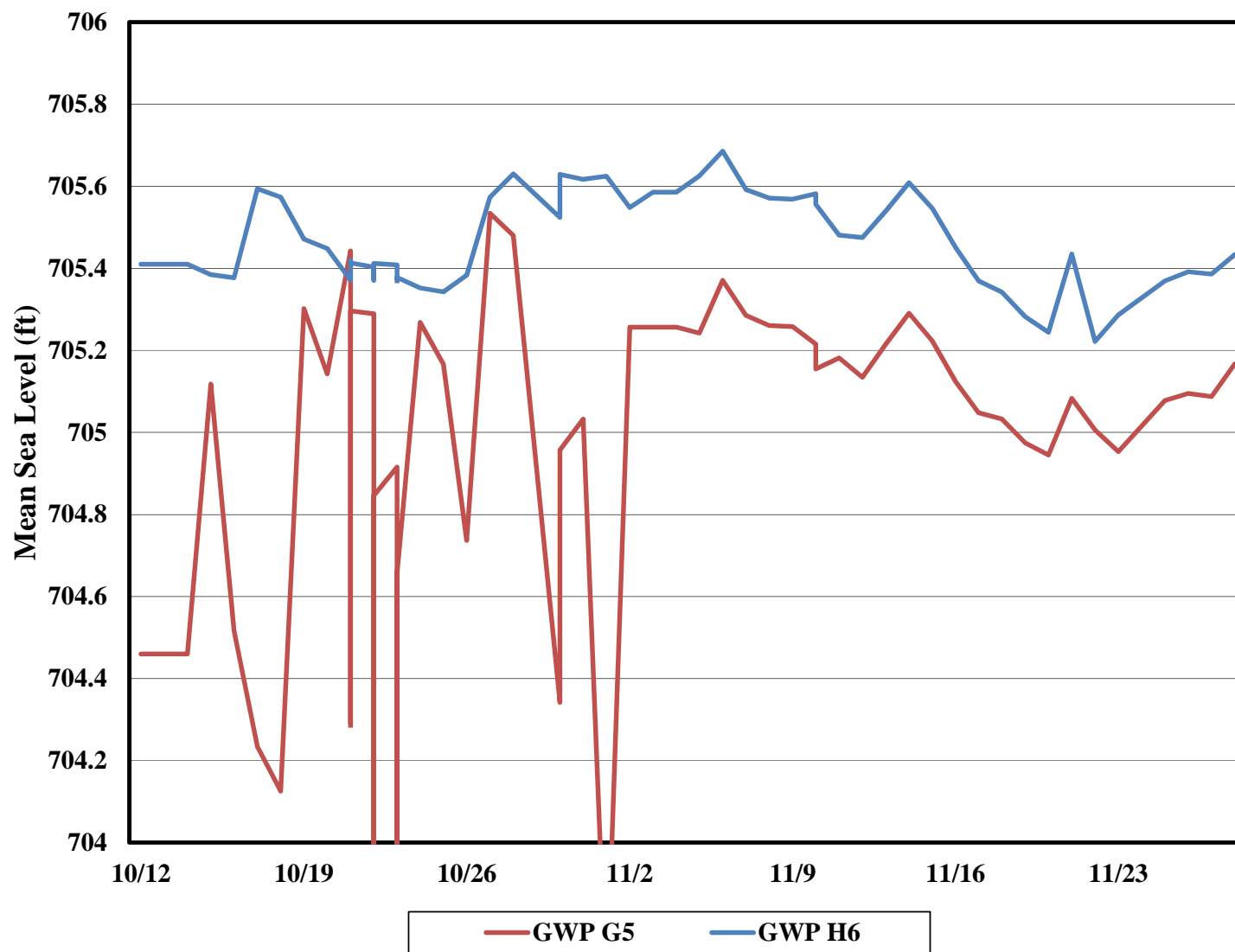


Figure 4c. GWP G5 and GWP H6

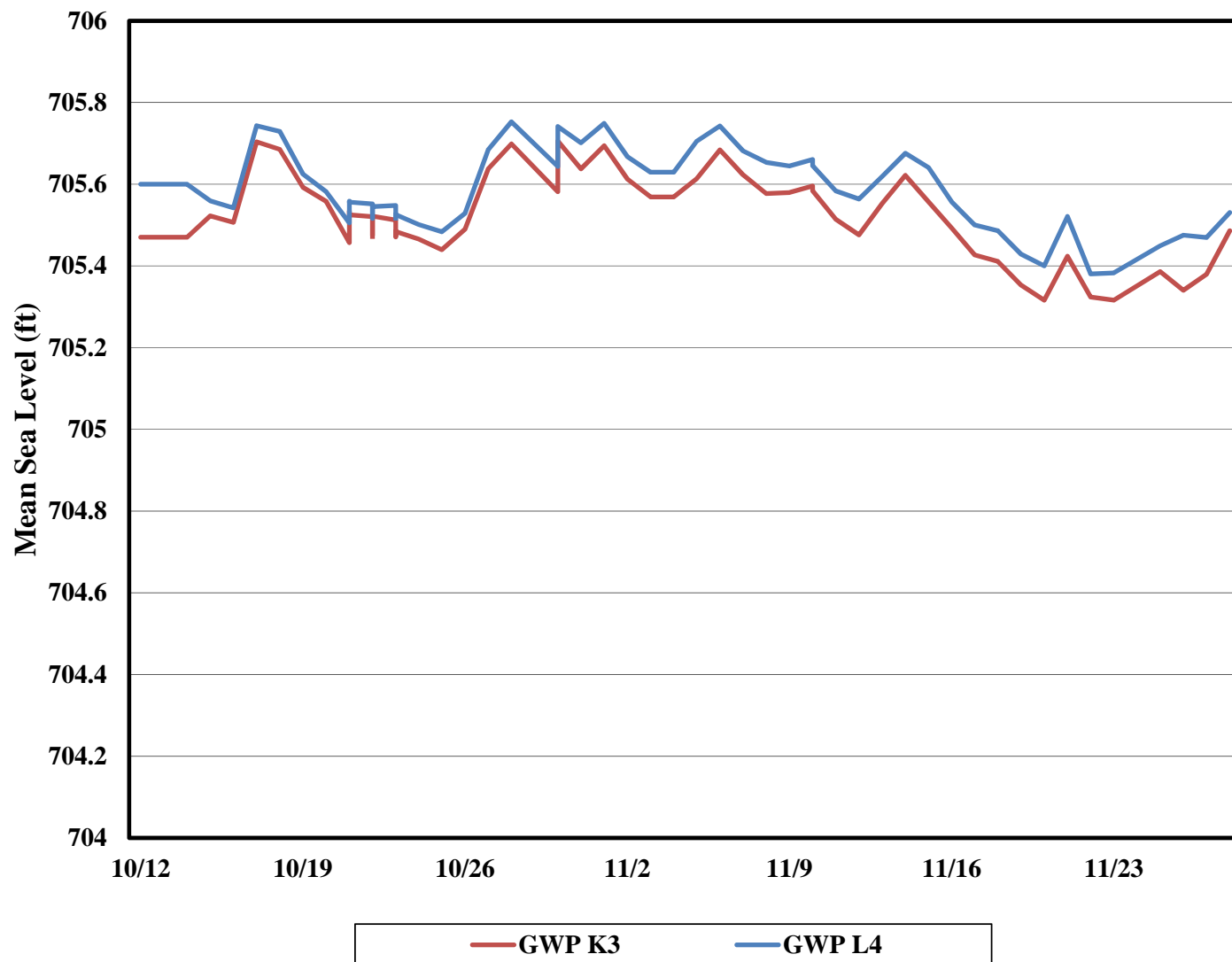
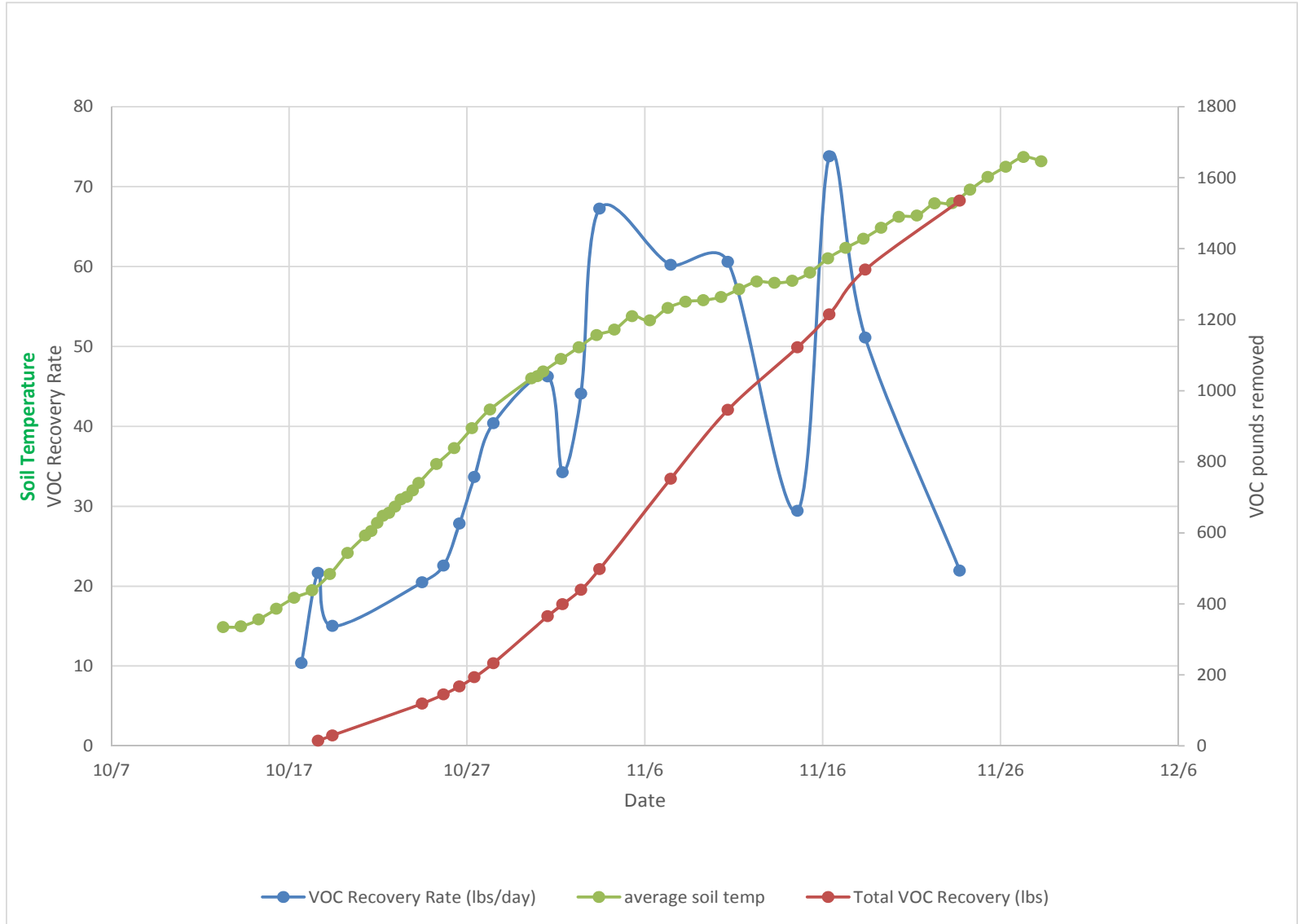


Figure 4d. GWP K3 and GWP L4





**Figure 5. ERH Performance**



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December 6, 2016

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Remedial Project Manager  
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(217) 557-8155  
Brian.Conrath@Illinois.gov

**Subject: ERH Weekly Report**  
**November 28, 2016 to December 5, 2016**  
**Southeast Rockford Groundwater Contamination Site Area 4**  
**2630 Marshall Street, Rockford, Illinois.**

Dear Mr. Conrath,

This letter report contains a brief description of the Electrical Resistance Heating (ERH) remediation operations performed at 2630 Marshall Street, Rockford, Illinois (the Site). The time period addressed in this report is from November 28 to December 5, 2016.

### **ERH Application Summary**

The ERH system operational parameters through November 28, 2016 are presented below in **Table 1**.

**Table 1. Key ERH System Operational Parameters**

<b>ERH System Parameters</b>	<b>November 28</b>	<b>December 5</b>
Weekly Average Power (kW)	646	792
Cumulative Energy Applied (kWh)	553,700	684,500
Average Subsurface Temperature (°C)	73.2	79.5
Average Vapor System Flow Rate (scfm)	756	749
Duration of System Shutdown (approximate hours)	10	0
Discharge to GETS flow rate (gpm)	0.20	1.0
Total water discharged to GETS	19,966	28,876

The ERH system did not experience any shut downs during the reporting period and the PCU, vapor recovery, and vapor abatement systems operated within design parameters during the reporting period.

### **Temperatures**

The average subsurface temperature in the treatment area increased from 73.2 degrees Celsius (°C) to 79.5°C during the reporting period. The highest individual temperature measurement within the

treatment volume was 100.5°C. This was recorded at TMP location F4 at 27-feet below ground surface (ft bgs).

To illustrate the temperature change, the data is presented in seven separate graphs based on TMP location. Temperatures relative to depth for each TMP are presented in **Figures 2a** through **2g**. Average subsurface temperature over time is presented in **Figure 3**.

### **Power and Energy**

The PCU averaged 792 kilowatts (kW) of applied power to the treatment volume during the reporting period. A total of 684,500 kilowatt-hours (kWh) of energy have been applied to the subsurface as of December 5, 2016.

### **ERH Vapor Recovery**

During this reporting period, the average vacuum applied to the subsurface was approximately 6.0 inches of mercury (in Hg). The vapor stream flow rate, as measured after the vapor recovery blower, averaged 749 standard cubic feet per minute (scfm).

Vapor samples are collected from the influent and effluent of the vapor-phase granular activated carbon (VGAC) system whenever TRS is onsite. Analysis is performed using a photoionization detector (PID) MiniRae 3000. In accordance with the Work Plan, vapor samples are also collected once per week during the first four weeks of operations and then bimonthly thereafter. The samples were sent offsite for analysis by Method TO-15 including a listing of tentatively identified compounds in an attempt to quantify the heavier compounds recovered by the vapor recovery system. Of note, both 1,1,1-TCA and 1,1-DCE vapor concentrations have declined dramatically, while the heavier hydrocarbon compound recovery has dramatically increased.

The available results of the PID and TO-15 analysis can be found in the attached **Table 3**, **Table 4** and **Table 5**. The PID readings and TO-15 data confirm that the VGAC system is performing as designed and operating in accordance with the substantive discharge requirements. Based on PID readings, TRS estimates that approximately 2,303 pounds of volatile organic compounds (VOCs) have been removed from the treatment volume.

### **ERH Process Water**

During this reporting period, the ERH system discharged 8,910 gallons to the GETS system at an average rate of 1.0 gallon per minute (gpm). The water recovered by the ERH system is passed through a particulate filter and two liquid-phase granular activated carbon (LGAC) vessels arranged in series prior to discharge to the GETS system. The water recovered and treated with LGAC prior to being sent to the GETS system is now being analyzed for VOCs twice per month by an offsite laboratory. The results of these analyses are provided in **Table 6**. The LGAC system has been working as designed.

### **Groundwater and Vacuum Piezometers**

TRS collects vacuum piezometer readings at least once a week while onsite to illustrate full vacuum influence across the Site. The readings collected through the reporting period are presented in **Table 2**.

**Table 2. Site VP Readings (inches water column)**

Date/Time	VP-B4	VP-C2	VP-D4	VP-G4	VP-K5	VP-L4	VP-L7	VP-M6
10/14/16	1.0	1.0	3.0	8.0	8.5	3.0	3.0	4.0
10/18/16	1.5	1.5	4.0	8.8	8.0	3.0	3.3	3.5
10/24/16	1.5	1.5	3.5	5.5	6.5	2.5	3.0	3.0
11/2/16	1.5	1.5	4.0	5.0	6.5	2.5	3.0	3.5
11/10/16	1.0	1.0	4.5	5.0	7.0	2.5	2.5	3.5
11/15/16	1.0	1.0	4.0	4.5	7.0	3.0	2.5	3.0
11/21/16	1.5	1.5	3.5	5.0	6.5	3.0	3.0	3.0
11/29/16	1.0	1.0	3.0	4.5	6.0	2.5	2.5	3.0

In addition to the vacuum piezometer readings, TRS also collects groundwater elevation measurement readings daily through automated data collection. The groundwater elevation readings are presented graphically in **Figures 4a** through **4d**. As the readings show, there are fluctuations occurring within the piezometers, but the changes are consistent inside and outside the treatment volume, indicating hydraulic control.

The GETS system operated with ground water pumping well EW1 online during this operational period, recovering about 30 gpm from the well. EW1 is located north of the treatment volume, on Marshall Street. Ground water pumping well EW3 was removed from operation early in the reporting period in an effort to reduce the negative effects on the GETS system from clogged bag filters and ultimately increase GETS system run time.

### **Planned Activities**

TRS personnel will visit the Site the week of December 5, 2016, to collect operations data, optimize the system, and perform weekly system maintenance. Based on remediation progress and percent energy input, TRS has scheduled the first soil sampling event for the week of December 12, 2016. Terra Probe Environmental will begin soil sampling on the morning of Tuesday December 13, 2016.

Should you have any questions concerning this report, or if you would like any additional information, please contact either me or Chris Thomas by phone at (360) 560-7551 and (847) 376-3691, respectively.

Sincerely,  
TRS Group, Inc.



Bradley Morris  
Project Manager



Attachments: Table 3, 4, 5 - Vapor Concentrations  
Table 6 – LGAC performance  
Figure 1 – Site Plan  
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Figure 2b – TMP F4 Temperature vs. Depth  
Figure 2c – TMP H3 Temperature vs. Depth  
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Figure 2e – TMP K5 Temperature vs. Depth  
Figure 2f – TMP K7 Temperature vs. Depth  
Figure 2g – TMP M5 Temperature vs. Depth  
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Figure 4c – GWP G5 and H6  
Figure 4d – GWP K3 and L4  
Figure 5 – ERH Performance

cc/att: Chris Thomas, TRS  
Tim Warner, TRS

## **Attachments**

Table 3 – Vapor Influent and Effluent PID Monitoring Results

Date	Blower Effluent Flow Rate (scfm)	Influent Conc (ppm)	Effluent Conc (ppm)	VOC Recovery Rate (lbs/day)	Total VOC Recovery (lbs)	VOC Discharge Rate (lbs/day)	Total HAPS Discharged (lbs)	Total VOC Discharged (lbs)	LAB Total VOC Recovery Rate (lbs/day)
10/17/16	830	25.6	0.0	10.4	0.0	0.0	0.0	0.0	
10/18/16	830	53.4	0.0	21.7	15.0	0.0	0.0	0.0	8.1
10/19/16	830	37.0	0.0	15.0	29.7	0.0	0.0	0.0	
10/24/16	834	50.2	0.0	20.5	119	0.0	0.0	0.0	
10/25/16	837	55.2	0.0	22.6	145	0.0	0.0	0.0	46.5
10/26/16	839	67.9	0.0	27.8	168	0.0	0.0	0.0	
10/27/16	850	81.0	0.0	33.6	193	0.0	0.0	0.0	
10/28/16	861	96.0	1.0	40.4	233	0.4	0.0	0.2	
10/31/16	860	110.0	3.0	46.2	365	1.3	0.2	2.8	
11/1/16	845	83.0	8.0	34.3	399	3.3	0.3	4.7	56.0
11/2/16	859	105.0	7.0	44.1	440	2.9	0.6	7.9	
11/3/16	860	160.0	15.0	67.2	497	6.3	0.9	12.8	
11/7/16	860	143.3	52.3	60.2	752	22.0	4.9	69.3	61.9
11/10/16	869	142.7	45.1	60.6	946	19.1	9.5	135	
11/14/16	860	70.0	53.0	29.4	1,122	22.3	15.1	216	
11/16/16	878	172.0	92.0	73.8	1,215	39.5	19.0	272	
11/18/16	824	127.0	82.0	51.1	1,341	33.0	24.1	345	
11/23/16	800	200.0	0.0	78.2	1,684	0.0	30.3	433	240.4
11/29/16	802	212.0	156.0	83.1	2,138	61.1	42.3	604	
12/1/16	719	0.0	0.0	0.0	2,235	0.0	47.3	676	
12/5/16	708	102.7	136.5	35.5	2,303	47.2	53.7	766	

Table 4 – TO 15 Influent to VGAC

Date	1,1,1 TCA (ug/m3)	1,1 DCE (ug/m3)	1,1 DCA (ug/m3)	Other TO-15 (ug/m3)	Other as Decane (ug/m3)	Total VOCs (ug/m3)	Total VOC Recovery Rate (lbs/day)
10/18/16	100,000	280	3,400	5,450	NS	109,130	8
10/25/16	50,000	7,200	1,700	6,900	469,690	620,095	47
11/1/16	53,000	29,000	430	23,670	633,670	739,770	56
11/7/16	13,000	16,000	2,800	21,625	749,022	802,447	62
11/23/16	1,800	1,800	590	121,860	5,330,521	3,351,575	240

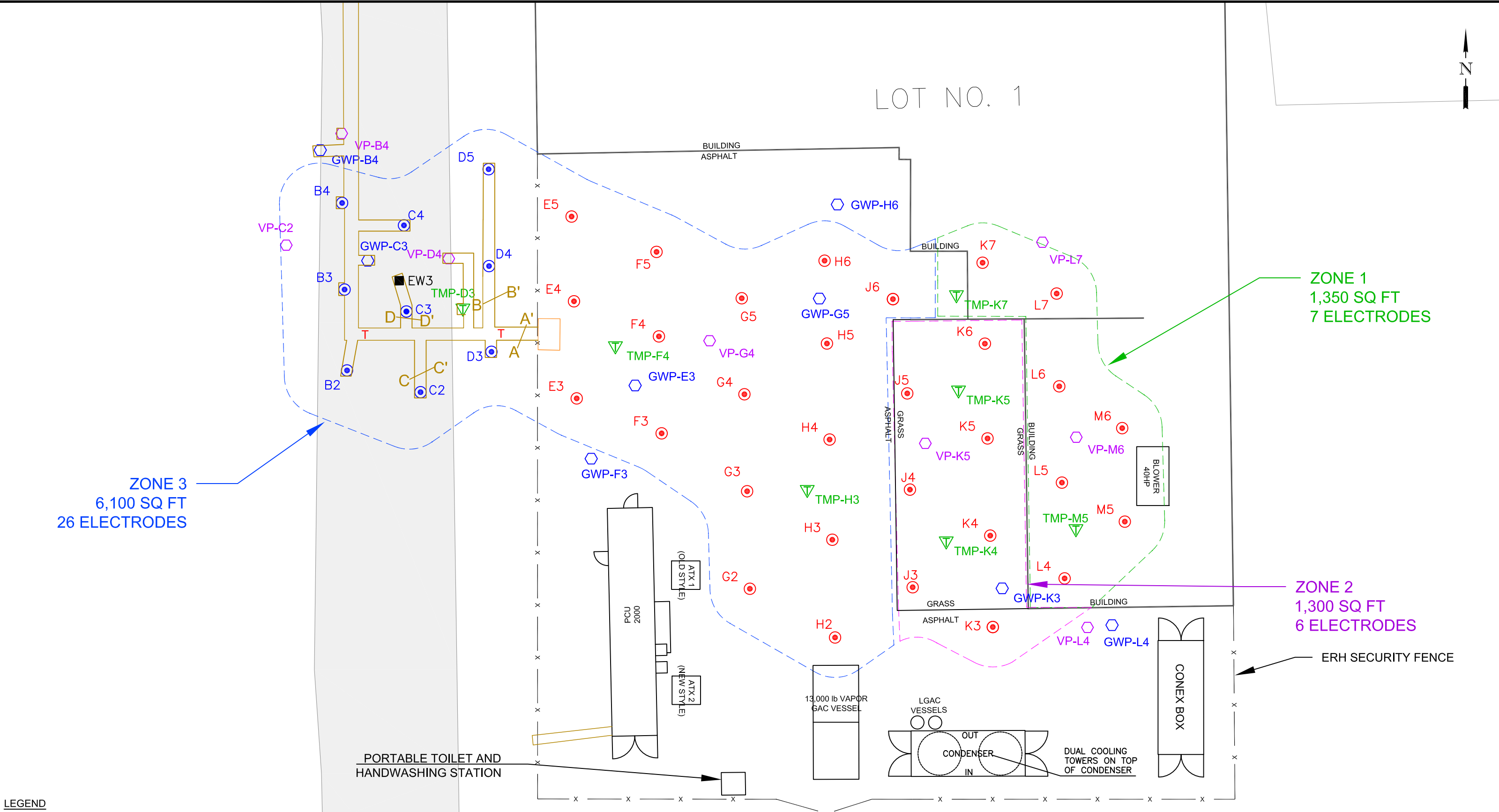


Table 5 – TO 15 Effluent from VGAC

Date	1,1,1 TCA Conc. (ug/m3)	1,1 DCE Conc. (ug/m3)	1,1 DCA Conc. (ug/m3)	Other TO- 15 (ug/m3)	Other as Decane (ug/m3)	Total VOCs (ug/m3)	Total VOC Discharge Rate (lbs/day)
10/18/16	47	ND	ND	410	NS	457	0
10/25/16	5,200	110	430	17	NS	5,757	0
11/1/16	72,000	8,300	ND	ND	NS	80,300	6
11/7/16	100,000	15,000	5,800	1,370	NS	122,170	9
11/23/16	79	48	15	233	20,532	20,907	2

Table 6-LGAC and GETS discharge data

	10/18/16	10/25/16	11/1/16	11/7/16
Temperature (F)	75	80	85	84
pH	8.1	8.0	8.6	9
Pre LGAC Carbon Tetrachloride	ND	ND	ND	ND
Pre LGAC DCE	ND	8.4	17	15.0
Pre LGAC 1,1,1 - TCA	47	110	69	24
Pre LGAC 1,1,2 - TCA	0	1.5	2	2
Pre LGAC TCE	ND	1.1	1	0,72
Pre LGAC PCE	ND	ND	ND	1
Pre LGAC Total Contaminants Concentration	248	457	300	1,014
Mid LGAC Carbon Tetrachloride	ND	ND	ND	LGAC off
Mid LGAC DCE	ND	ND	ND	
Mid LGAC 1,1,1 - TCA	ND	ND	ND	
Mid LGAC 1,1,2 - TCA	ND	ND	ND	
Mid LGAC TCE	ND	ND	ND	
Mid LGAC PCE	ND	ND	ND	
Mid LGAC Total Contaminants Concentration	191	193	0	
Post LGAC Carbon Tetrachloride	ND	ND	ND	LGAC off
Post LGAC DCE	ND	ND	ND	
Post LGAC 1,1,1 - TCA	ND	ND	ND	
Post LGAC 1,1,2 - TCA	ND	ND	ND	
Post LGAC TCE	ND	ND	ND	
Post LGAC PCE	ND	ND	ND	
Post LGAC Total Contaminants Concentration	249.0	214.9	24	



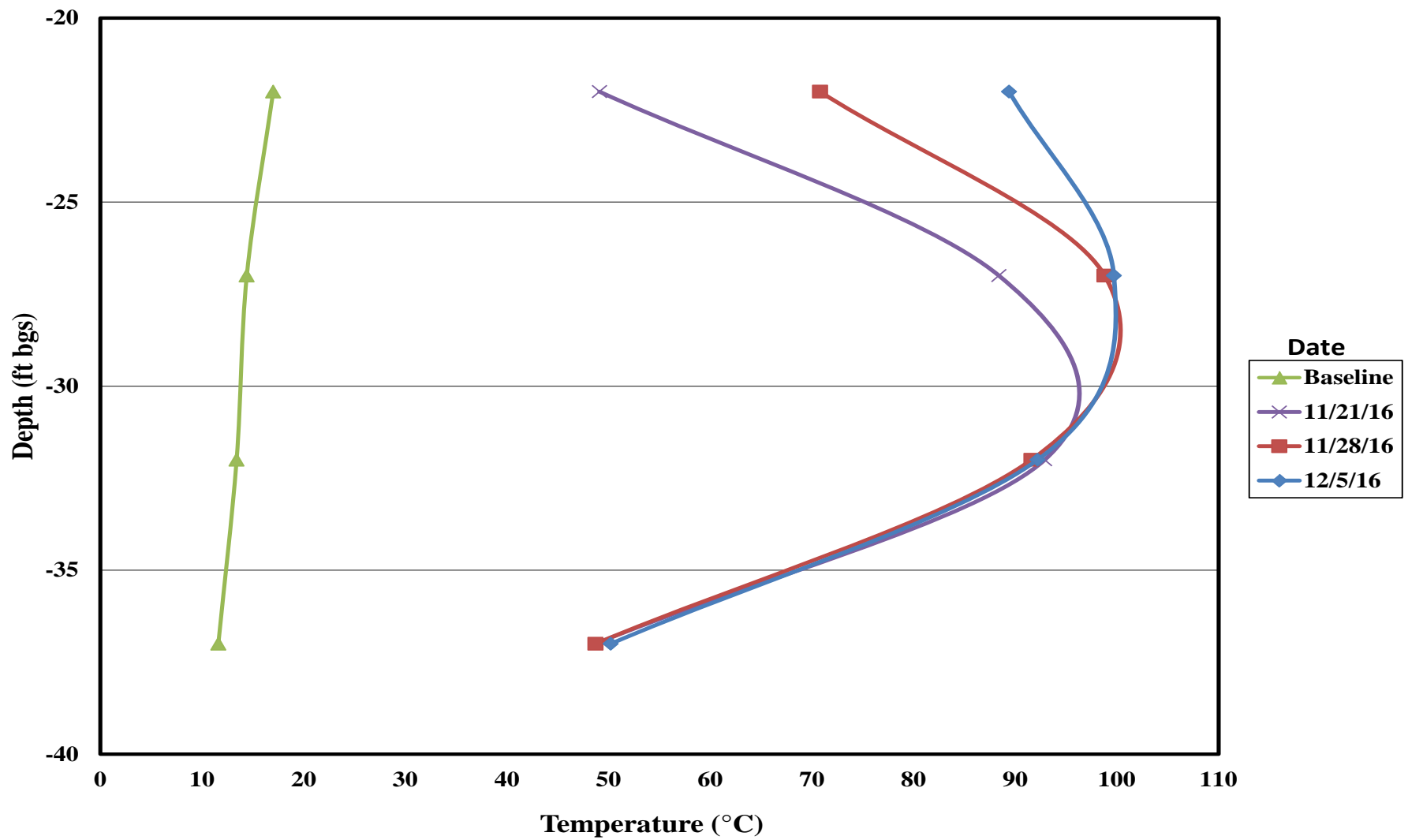
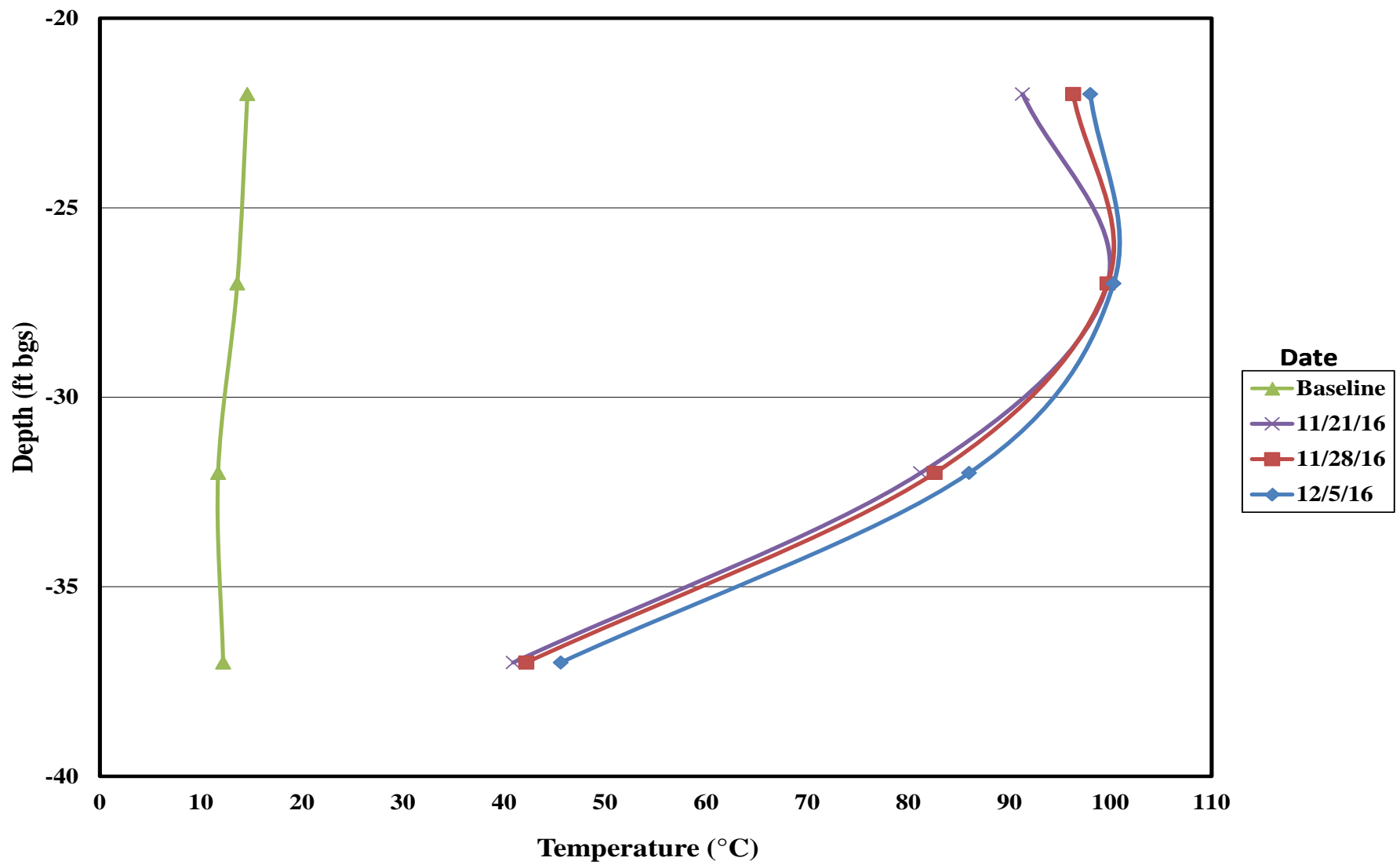


Figure 2a. TMP D3 Temperature vs. Depth





**Figure 2b.** TMP F4 Temperature vs. Depth

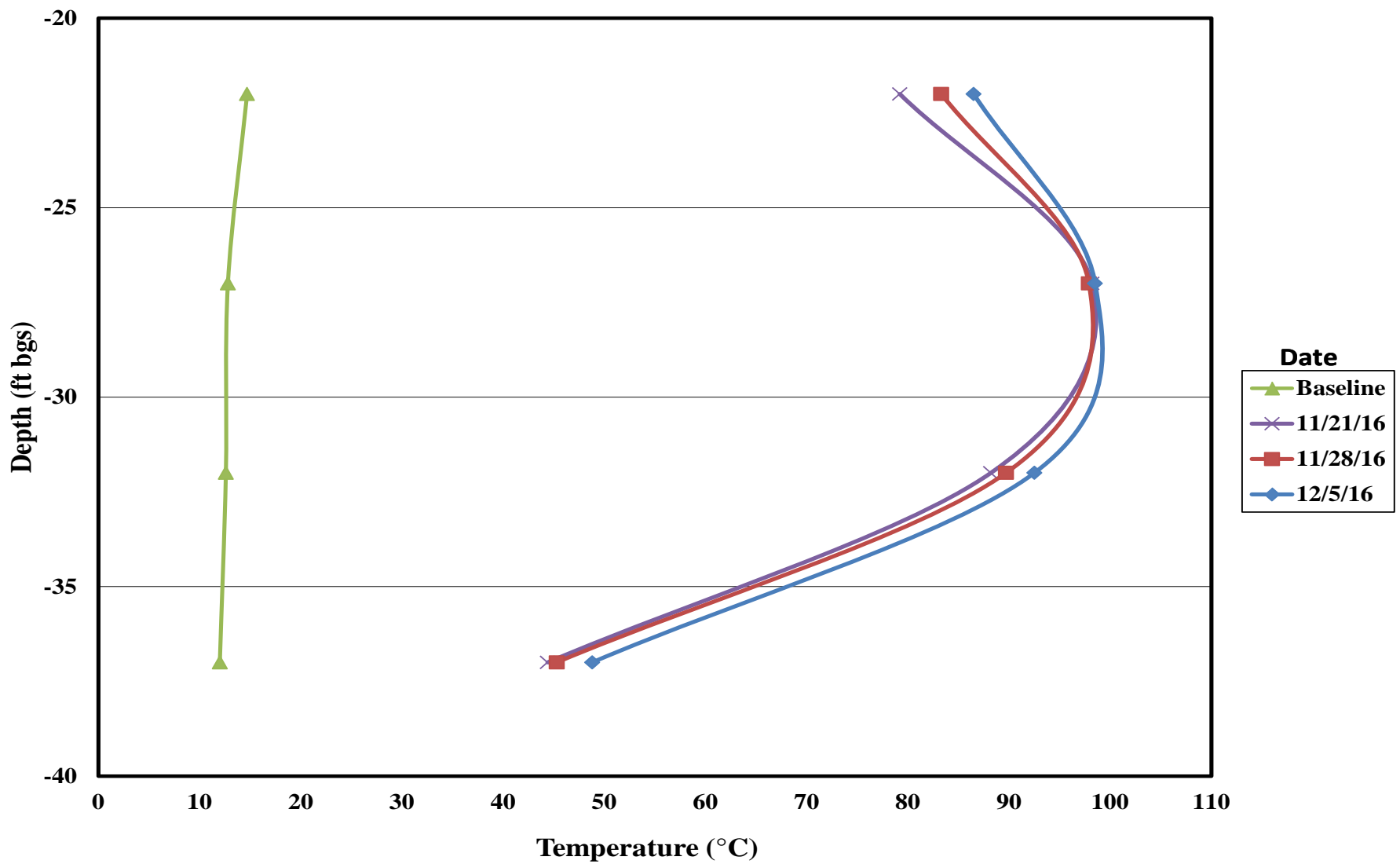


Figure 2c. TMP H3 Temperature vs. Depth

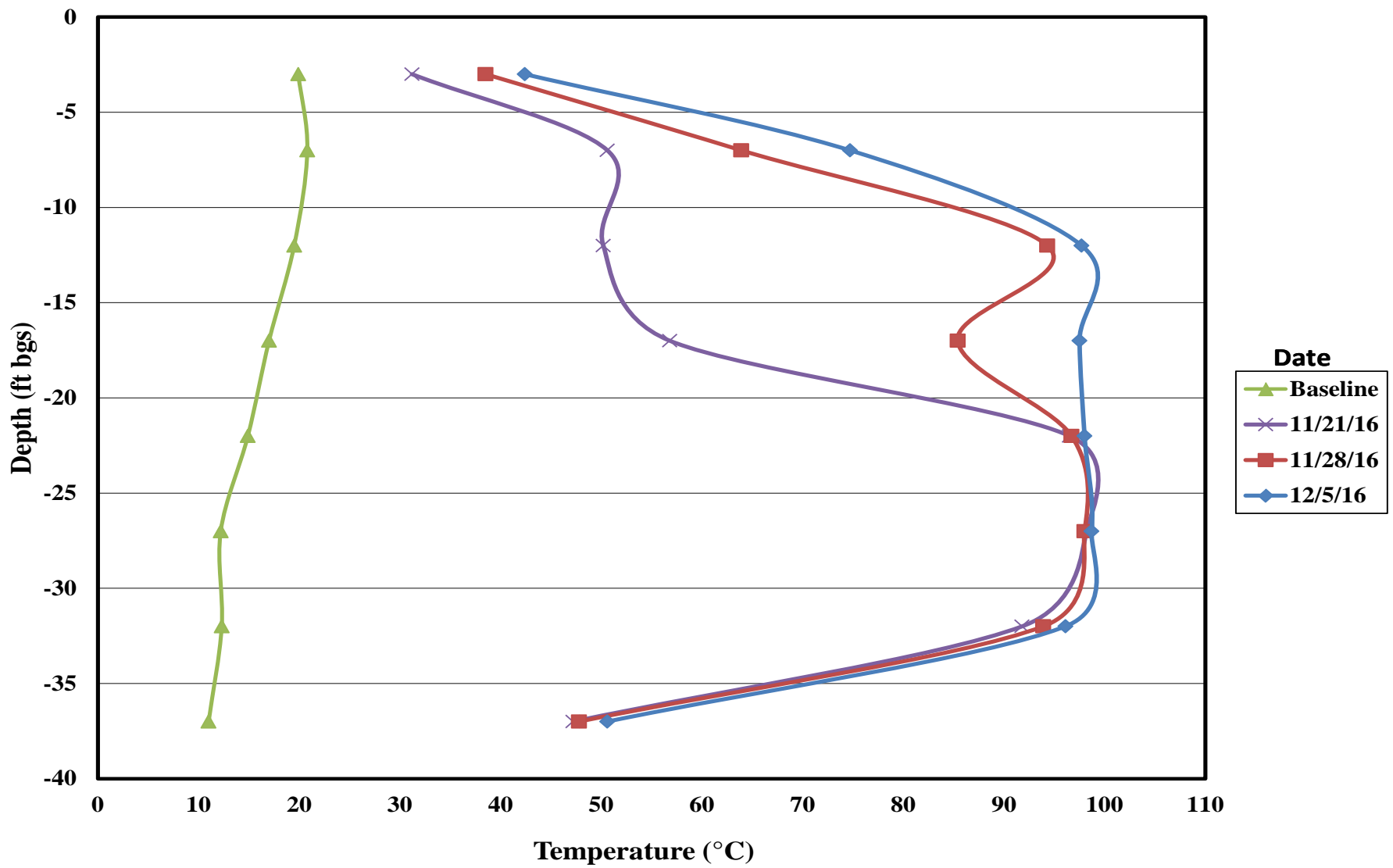


Figure 2d. TMP K4 Temperature vs. Depth

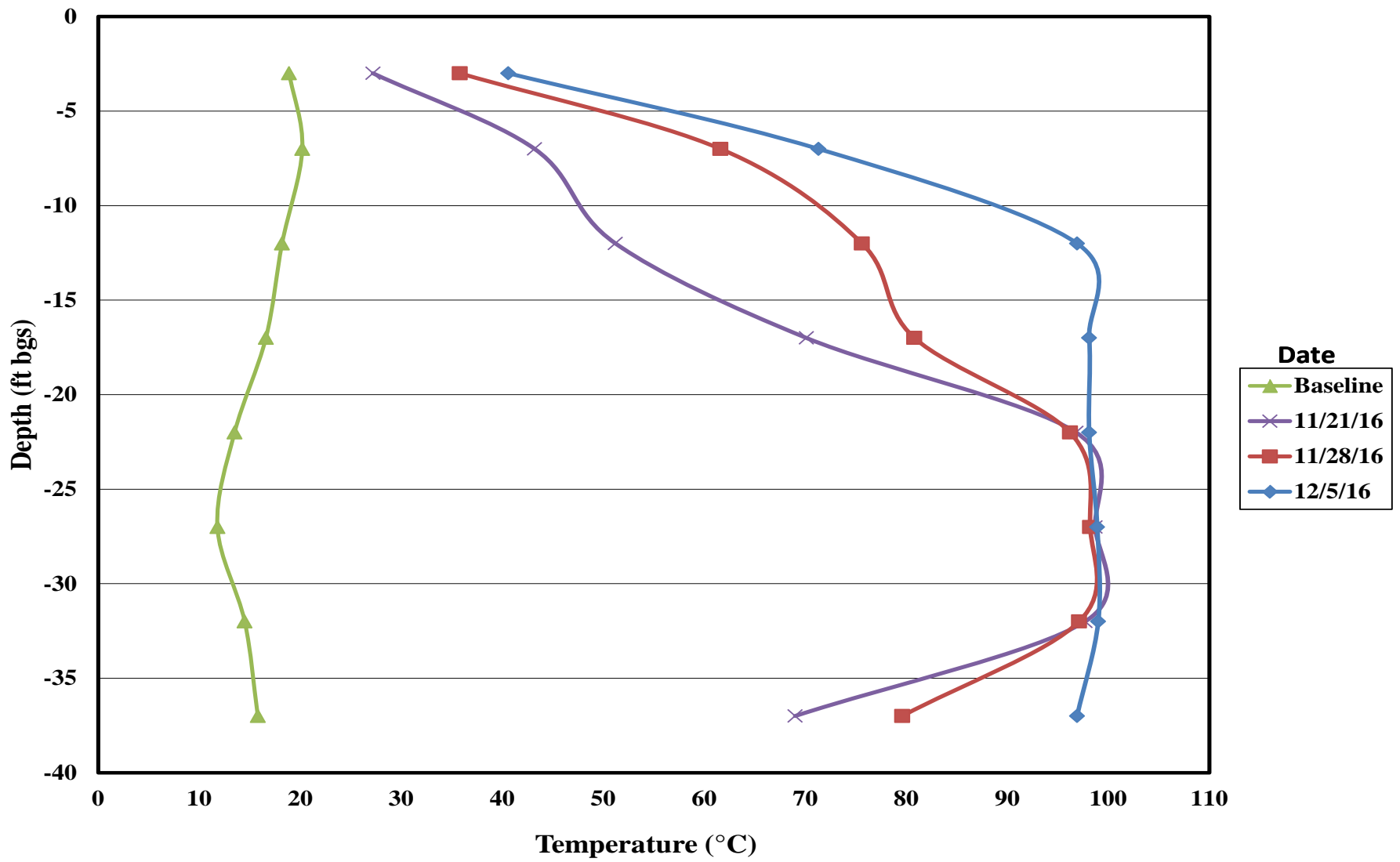


Figure 2e. TMP K5 Temperature vs. Depth



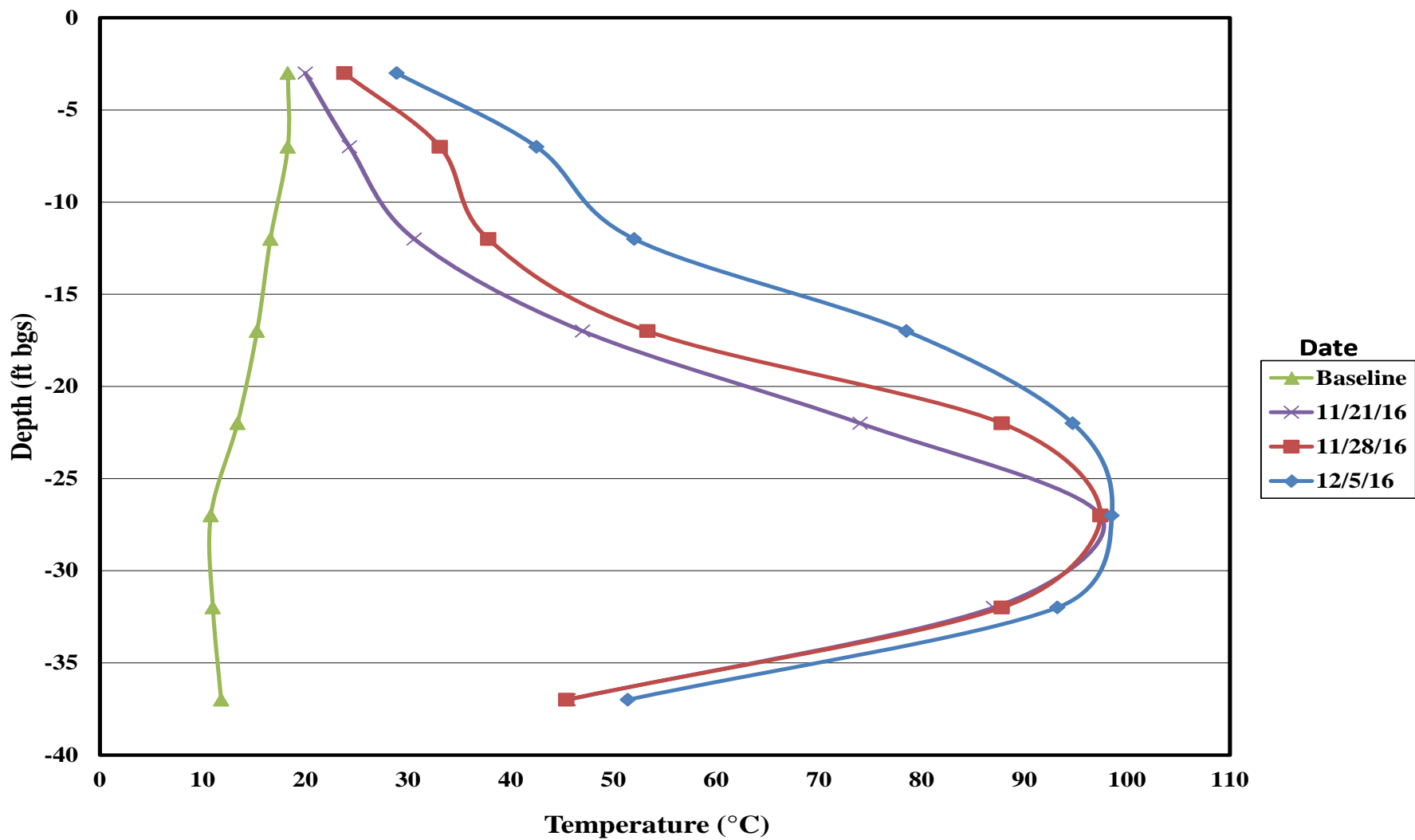


Figure 2f. TMP K7 Temperature vs. Depth

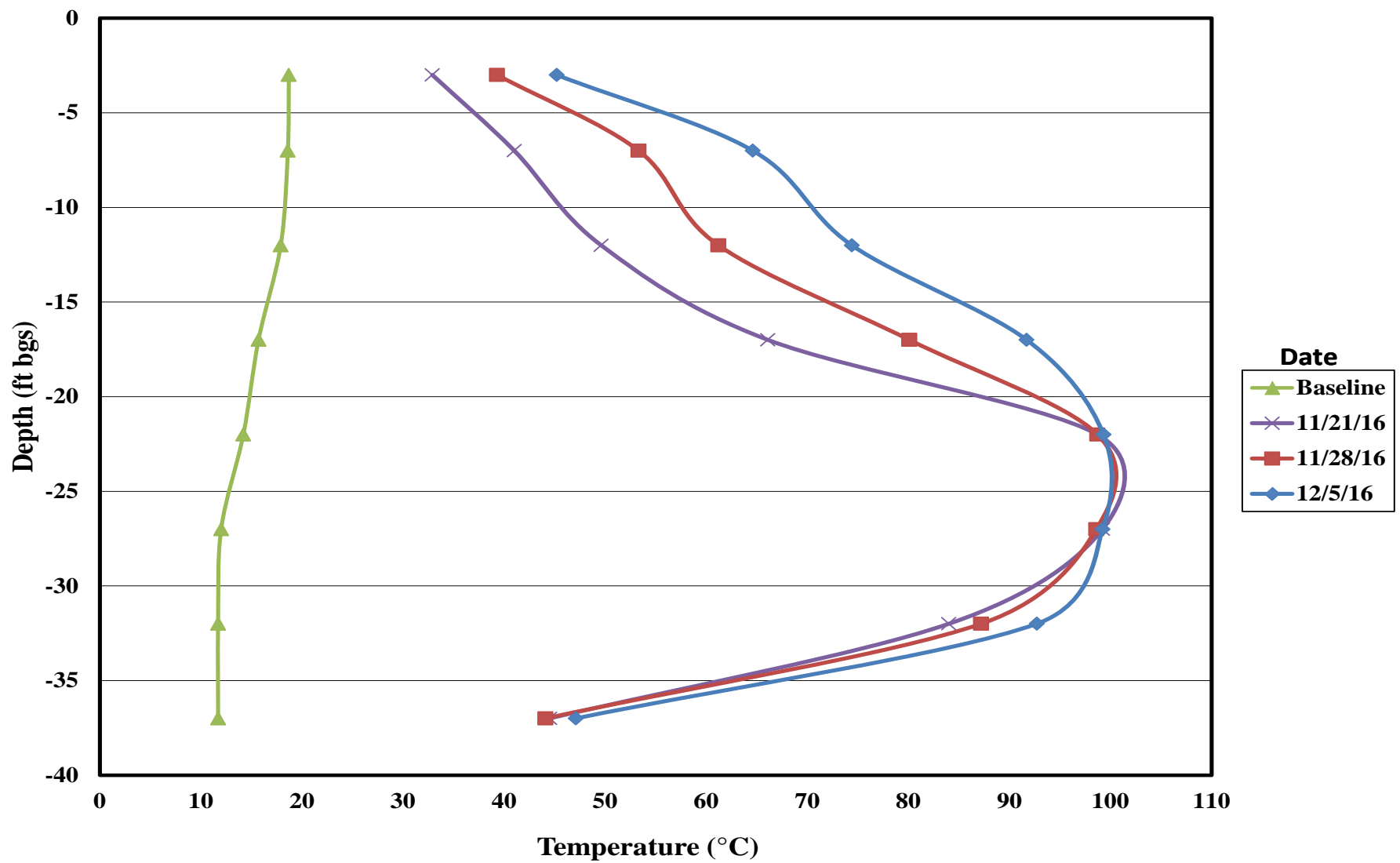
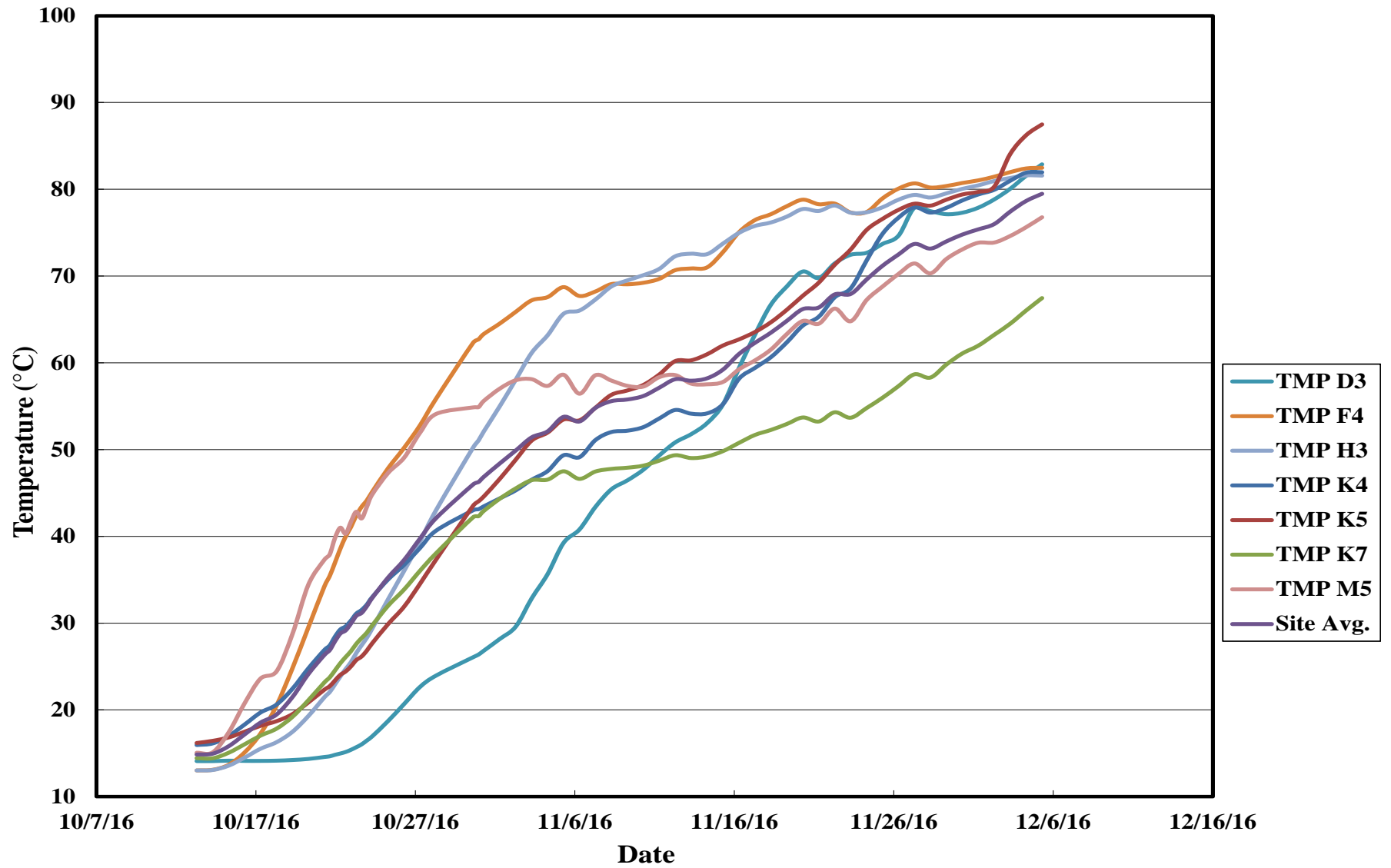


Figure 2g. TMP M5 Temperature vs. Depth



**Figure 3.** Subsurface Temperatures vs. Time

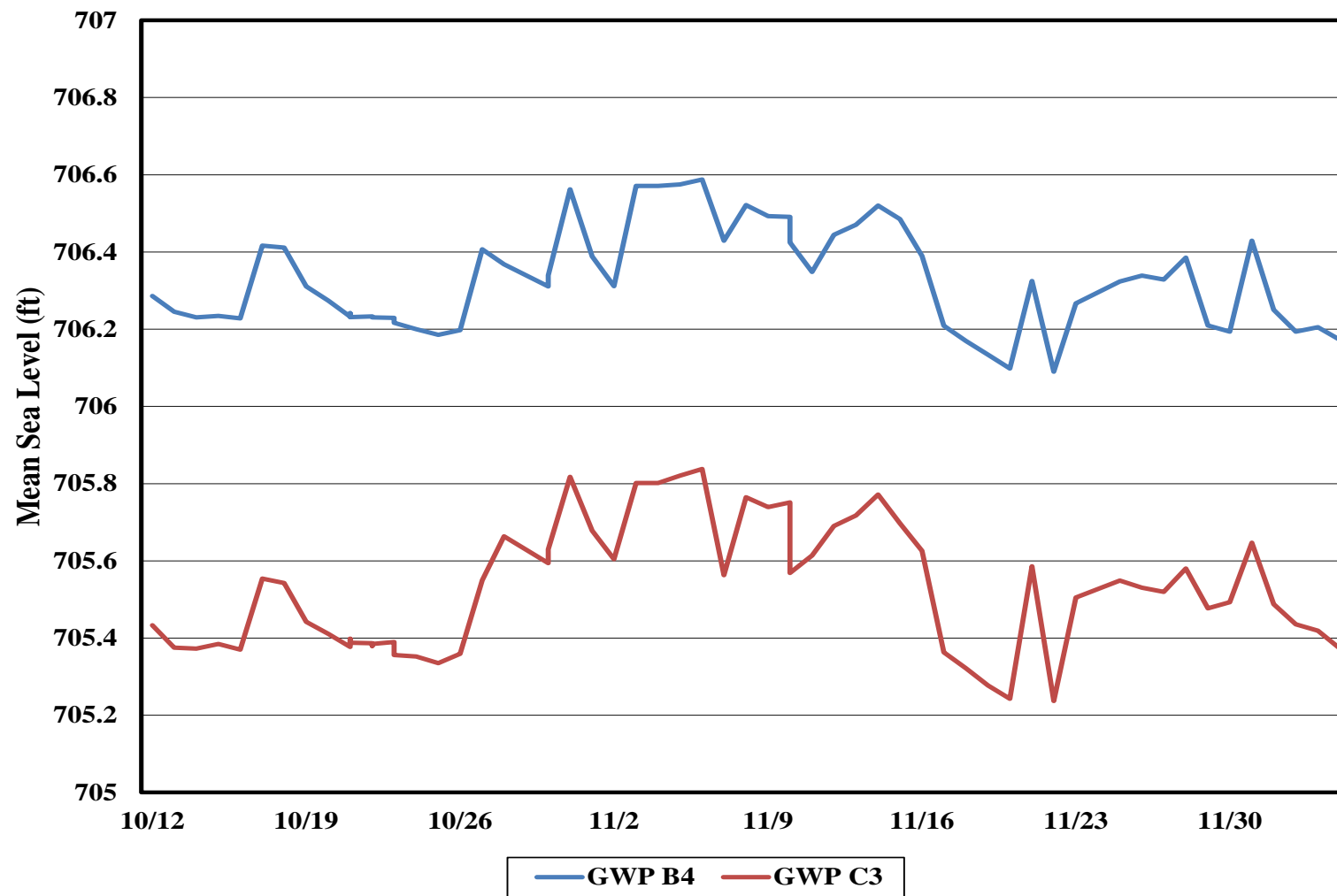
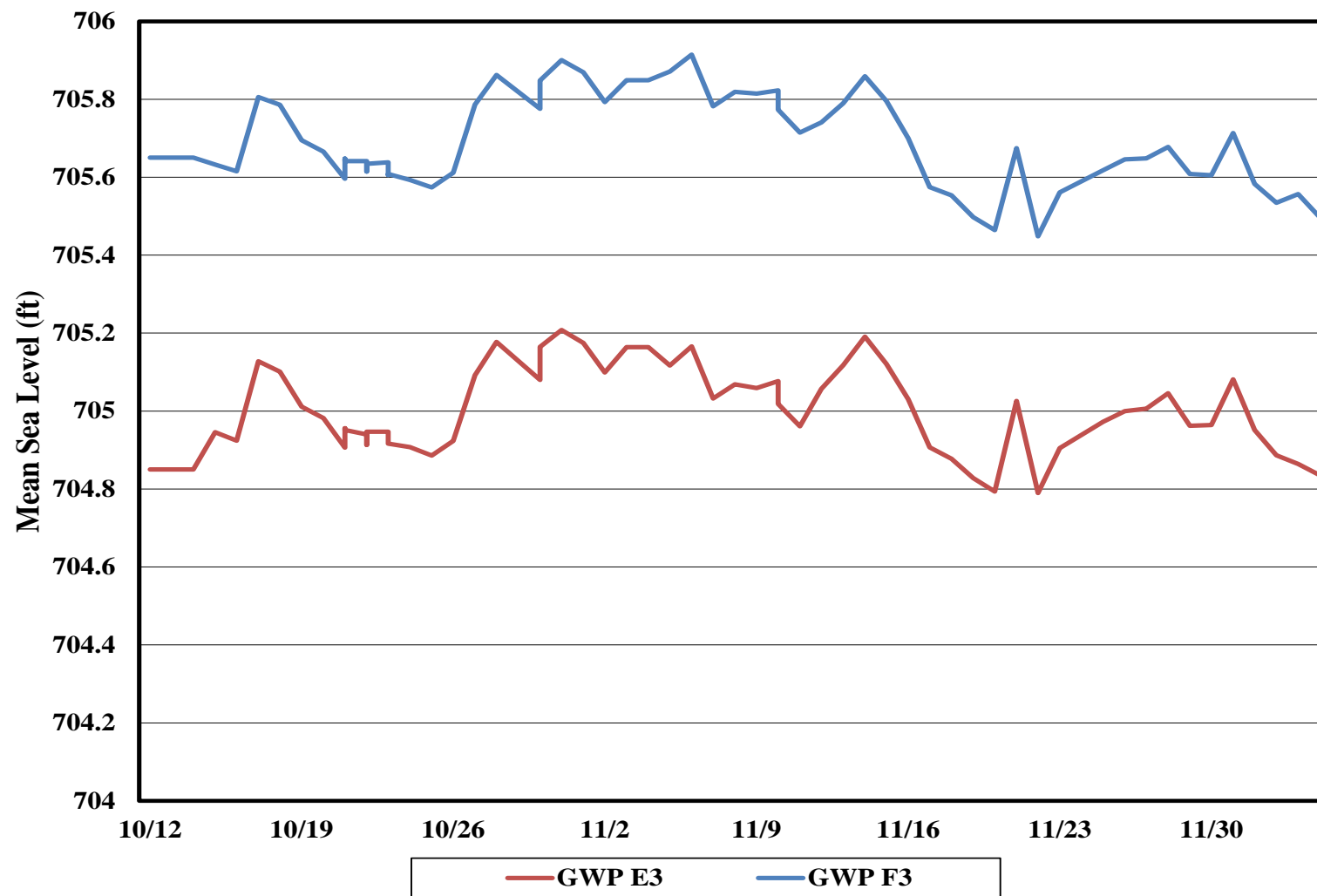


Figure 4a. GWP B4 and GWP C3





**Figure 4b.** GWP E3 and GWP F3

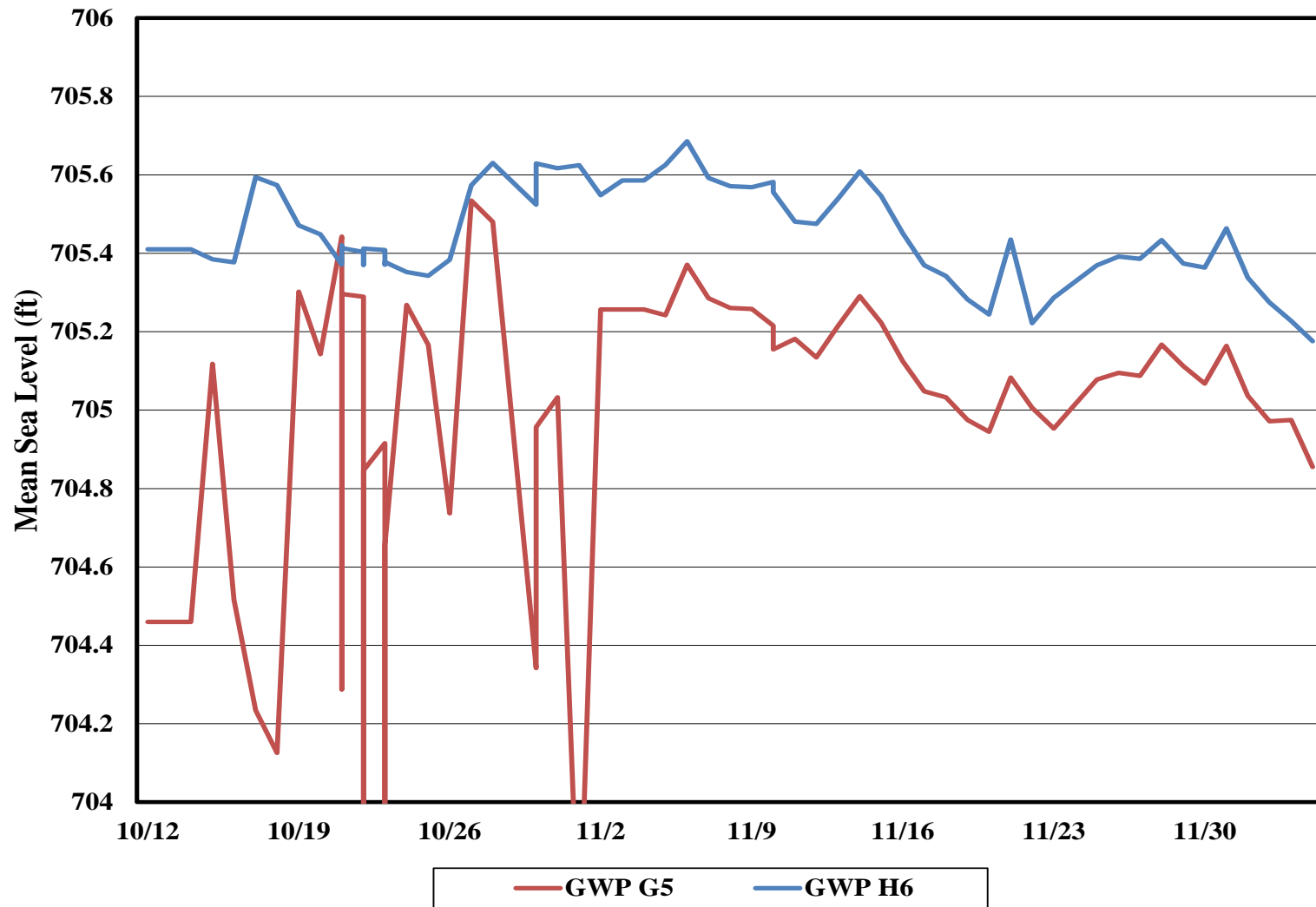


Figure 4c. GWP G5 and GWP H6

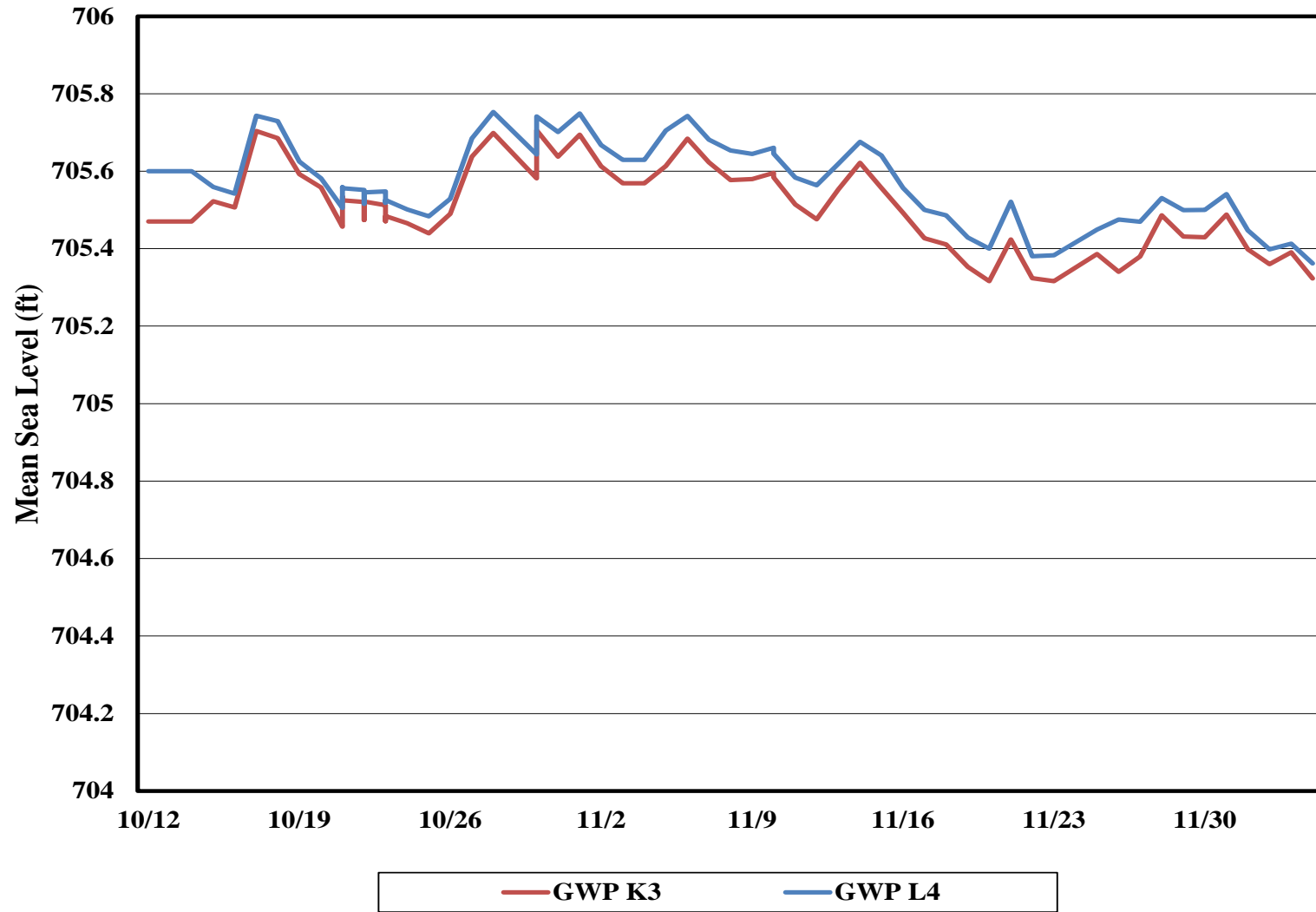
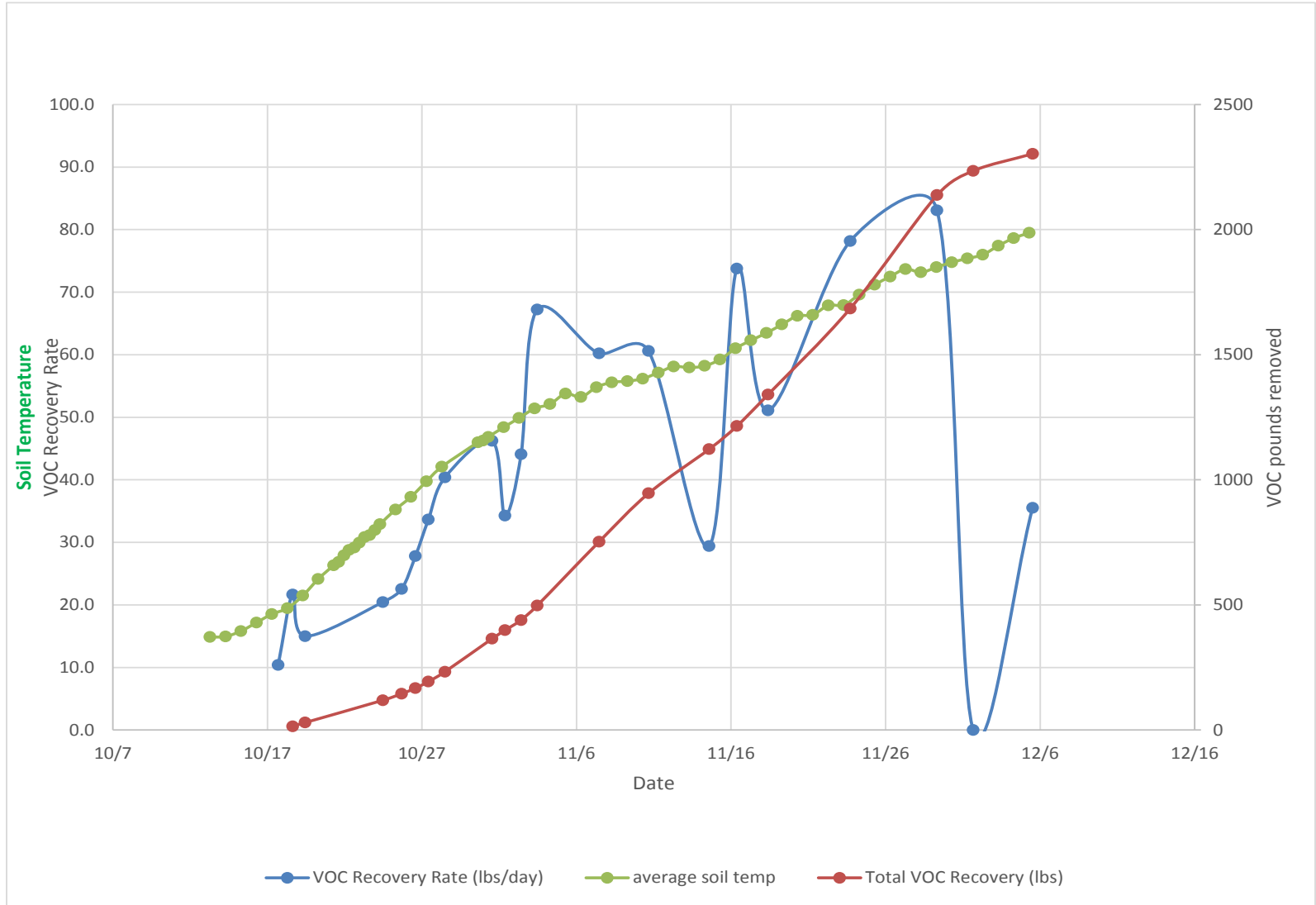


Figure 4d. GWP K3 and GWP L4



**Figure 5. ERH Performance**





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December 27, 2016

Mr. Brian Conrath  
Remedial Project Manager  
Illinois Environmental Protection Agency  
1021 N. Grand Ave. East  
Springfield, Illinois 62702  
(217) 557-8155  
Brian.Conrath@Illinois.gov

**Subject: ERH Weekly Report**  
**December 19, 2016 to December 26, 2016**  
**Southeast Rockford Groundwater Contamination Site Area 4**  
**2630 Marshall Street, Rockford, Illinois.**

Dear Mr. Conrath,

This letter report contains a brief description of the Electrical Resistance Heating (ERH) remediation operations performed at 2630 Marshall Street, Rockford, Illinois (the Site). The time period addressed in this report is from December 19 to December 26, 2016.

### **ERH Application Summary**

The ERH system operational parameters through December 26, 2016 are presented below in **Table 1**.

**Table 1. Key ERH System Operational Parameters**

<b>ERH System Parameters</b>	<b>December 19</b>	<b>December 26</b>
Weekly Average Power (kW)	57	272
Cumulative Energy Applied (kWh)	822,900	862,000
Average Subsurface Temperature (°C)	71.3	67.2
Average Vapor System Flow Rate (scfm)	766	824
Duration of System Shutdown (approximate hours)	154	50
Discharge to GETS flow rate (gpm)	0.9	0.5
Total water discharged to GETS	53,330	58,034

The ERH system was shutdown during the reporting period while the project team awaited the results of the confirmation soil sampling that occurred during the previous reporting period. The shutdown occurred on the evening of Monday December 12, 2016 at approximately 9:15 pm and involved only suspending the application of electrical energy to the subsurface. The vapor recovery system continued to operate. The ERH system remained down throughout the soil sampling event and into the beginning of this reporting period until all results from the soil sampling event were received and analyzed.

Upon receipt and analysis of the soil samples, TRS determined that small focus areas within the overall treatment volume were in need of additional treatment. These focus areas include sample depths at SS1, SS3, SS6, SS15, and SS17.

TRS visited the site on Wednesday December 21, 2016 and removed from service the electrodes that were in areas no longer requiring ERH treatment (outside the focus areas). The ERH system was configured into reduced focus areas and restarted at approximately 10:30am Dec 21. In the resulting reduced focus areas, the electrodes D4, D5, E4, E5, F4, F5, G4, G5, H4, H5, H6, K6, K7, L5, L7, M5, and M6 remain in operation.

Aside from the scheduled shutdown the PCU, vapor recovery, and vapor abatement systems operated within design parameters during the reporting period.

## **Temperatures**

The average subsurface temperature in the treatment area decreased from 71.3 degrees Celsius (°C) to 67.2°C during the reporting period as the site began to cool during the ERH system shutdown. In addition, the areas requiring further treatment happen to be located in areas without TMPs so temperature increases have not been recorded during the reporting period. TRS is in the process of evaluating the installation of a TMP within the reduced focus area so that future temperature changes may be more closely observed. The highest individual temperature measurement within the treatment volume was 99.6°C. This was recorded at TMP location M5 at 27-feet below ground surface (ft bgs).

To illustrate the temperature change, the data is presented in seven separate graphs based on TMP location. Temperatures relative to depth for each TMP are presented in **Figures 2a** through **2g**. Average subsurface temperature over time is presented in **Figure 3**.

## **Power and Energy**

The PCU averaged 272 kilowatts (kW) of applied power to the treatment volume during the reporting period. A total of 862,000 kilowatt-hours (kWh) of energy have been applied to the subsurface as of December 26, 2016.

## **ERH Vapor Recovery**

During this reporting period, the average vacuum applied to the subsurface was approximately 5.5 inches of mercury (in Hg). The vapor stream flow rate, as measured after the vapor recovery blower, averaged 824 standard cubic feet per minute (scfm).

Vapor samples are collected from the influent and effluent of the vapor-phase granular activated carbon (VGAC) system whenever TRS is onsite. Analysis is performed using a photoionization detector (PID) MiniRae 3000. In accordance with the Work Plan, vapor samples are also collected once per week during the first four weeks of operations and then bimonthly thereafter. The samples were sent offsite for analysis by Method TO-15 including a listing of tentatively identified compounds in an attempt to quantify the heavier compounds recovered by the vapor recovery system. Of note, both 1,1,1-TCA and 1,1-DCE vapor concentrations have declined dramatically, while the heavier hydrocarbon compound recovery has dramatically increased.

The available results of the PID and TO-15 analysis can be found in the attached **Table 3**, **Table 4** and **Table 5**. The PID readings and TO-15 data confirm that the VGAC system is performing as designed and operating in accordance with the substantive discharge requirements. Based on PID readings, TRS estimates that approximately 3,473 pounds of volatile organic compounds (VOCs) have been removed from the treatment volume.

## ERH Process Water

During this reporting period, the ERH system discharged 4,704 gallons to the GETS system at an average rate of 0.5 gallon per minute (gpm). To date a total of 58,034 gallons has been discharged to the GETS system. The water recovered by the ERH system is passed through a particulate filter and two liquid-phase granular activated carbon (LGAC) vessels arranged in series prior to discharge to the GETS system. The water recovered and treated with LGAC prior to being sent to the GETS system is now being analyzed for VOCs twice per month by an offsite laboratory. The results of these analyses are provided in **Table 6**. The LGAC system has been working as designed.

## Groundwater and Vacuum Piezometers

TRS collects vacuum piezometer readings at least once a week while onsite to illustrate full vacuum influence across the Site. The readings collected through the reporting period are presented in **Table 2**.

**Table 2 Site VP Readings (inches water column)**

Date/Time	VP-B4	VP-C2	VP-D4	VP-G4	VP-K5	VP-L4	VP-L7	VP-M6
10/14/16	1.0	1.0	3.0	8.0	8.5	3.0	3.0	4.0
10/18/16	1.5	1.5	4.0	8.8	8.0	3.0	3.3	3.5
10/24/16	1.5	1.5	3.5	5.5	6.5	2.5	3.0	3.0
11/2/16	1.5	1.5	4.0	5.0	6.5	2.5	3.0	3.5
11/10/16	1.0	1.0	4.5	5.0	7.0	2.5	2.5	3.5
11/15/16	1.0	1.0	4.0	4.5	7.0	3.0	2.5	3.0
11/21/16	1.5	1.5	3.5	5.0	6.5	3.0	3.0	3.0
11/29/16	1.0	1.0	3.0	4.5	6.0	2.5	2.5	3.0
12/5/16	1.5	1.5	4.0	5.0	6.0	3.0	3.0	3.0
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In addition to the vacuum piezometer readings, TRS also collects groundwater elevation measurement readings daily through automated data collection. The groundwater elevation readings are presented graphically in **Figures 4a** through **4d**. As the readings show, there are fluctuations occurring within the piezometers, but the changes are consistent inside and outside the treatment volume, indicating hydraulic control.

The GETS system operated with ground water pumping well EW1 online during this operational period, recovering about 30 gpm from the well. EW1 is located north of the treatment volume, on Marshall Street.

## Planned Activities

TRS personnel will visit the Site the week of January 2, 2017, to collect operations data, optimize the system, and perform weekly system maintenance should additional operations of the ERH system be required.

Should you have any questions concerning this report, or if you would like any additional information, please contact either me or Chris Thomas by phone at (360) 560-7551 and (847) 376-3691, respectively.

Sincerely,  
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Bradley Morris  
Project Manager

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cc/att: Chris Thomas, TRS  
Tim Warner, TRS



## **Attachments**

**Table 3 Vapor Influent and Effluent PID Monitoring Results**

Date	Blower Flow Rate (scfm)	Influent Conc (ppm)	Effluent Conc (ppm)	VOC Recovery Rate (lbs/day)	Total VOC Recovery (lbs)	VOC Discharge Rate (lbs/day)	Total HAPS Discharged (lbs)	Total VOC Discharged (lbs)	LAB Total VOC Recovery Rate (lbs/day)
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Date	Blower Flow Rate (scfm)	Influent Conc (ppm)	Effluent Conc (ppm)	VOC Recovery Rate (lbs/day)	Total VOC Recovery (lbs)	VOC Discharge Rate (lbs/day)	Total HAPS Discharged (lbs)	Total VOC Discharged (lbs)	LAB Total VOC Recovery Rate (lbs/day)
12/6/16	711	126.1	123.0	43.8	2,498	42.7	66.6	951	50.9
12/16/16	770	206.0	202.0	77.5	3,064	76.0	105.3	1,505	
12/21/16	776	104	101	39.4	3,393	38.3	105.3	1,505	
12/23/16	886	120	117	51.9	3,473	50.6	105.3	1,505	

**Table 4 TO 15 Influent to VGAC**

Date	1,1,1 TCA (ug/m3)	1,1 DCE (ug/m3)	1,1 DCA (ug/m3)	Other TO-15 (ug/m3)	Other as Decane (ug/m3)	Total VOCs (ug/m3)	Total VOC Recovery Rate (lbs/day)
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11/1/16	53,000	29,000	430	23,670	633,670	739,770	56
11/7/16	13,000	16,000	2,800	21,625	749,022	802,447	62
11/23/16	1,800	1,800	590	121,860	5,330,521	5,456,571	391
12/6/16	540	2,000	210	20,610	774,873	798,233	51

Table 5 TO 15 Effluent from VGAC

Date	1,1,1 TCA Conc. (ug/m3)	1,1 DCE Conc. (ug/m3)	1,1 DCA Conc. (ug/m3)	Other TO-15 (ug/m3)	Other as Decane (ug/m3)	Total VOCs (ug/m3)	Total HAPS Discharge Rate (lb/day)	Total VOC Discharge Rate (lb/day)
10/18/16	47	ND	ND	410	NS	457	0.03	0
10/25/16	5,200	110	430	17	NS	5,757	0.43	0
11/1/16	72,000	8,300	ND	ND	NS	80,300	6.08	6
11/7/16	100,000	15,000	5,800	1,370	NS	122,170	9.42	9
11/23/16	79	48	15	233	20,532	20,907	0.03	2
12/6/16	1,200	3,200	120	6,600	860,440	871,561	0.71	56



**Table 6 LGAC and GETS discharge data**

	10/18/16	10/25/16	11/1/16	11/7/16	11/23/16	12/6/16
Temperature (F)	75	80	85	84	85	57
pH	8.1	8.0	8.6	9	8.1	9.0
Pre LGAC Carbon Tetrachloride	ND	ND	ND	ND	ND	ND
Pre LGAC DCE	ND	8.4	17	15.0	ND	ND
Pre LGAC 1,1,1 - TCA	47	110	69	24	2.6	ND
Pre LGAC 1,1,2 - TCA	0	1.5	2	2	ND	ND
Pre LGAC TCE	ND	1.1	1	0.72	ND	ND
Pre LGAC PCE	ND	ND	ND	1	ND	ND
Pre LGAC Total Contaminants Concentration	248	457	300	1,014	4,446	1718
Mid LGAC Carbon Tetrachloride	ND	ND	ND	LGAC off	ND	ND
Mid LGAC DCE	ND	ND	ND		ND	ND
Mid LGAC 1,1,1 - TCA	ND	ND	ND		2.5	1.2
Mid LGAC 1,1,2 - TCA	ND	ND	ND		ND	ND
Mid LGAC TCE	ND	ND	ND		ND	ND
Mid LGAC PCE	ND	ND	ND		ND	ND
Mid LGAC Total Contaminants Concentration	191	193	0		1,503	932
Post LGAC Carbon Tetrachloride	ND	ND	ND	LGAC off	ND	ND
Post LGAC DCE	ND	ND	ND		ND	ND
Post LGAC 1,1,1 - TCA	ND	ND	ND		ND	ND
Post LGAC 1,1,2 - TCA	ND	ND	ND		ND	ND
Post LGAC TCE	ND	ND	ND		ND	ND
Post LGAC PCE	ND	ND	ND		ND	ND
Post LGAC Total Contaminants Concentration	249.0	214.9	24		228	485



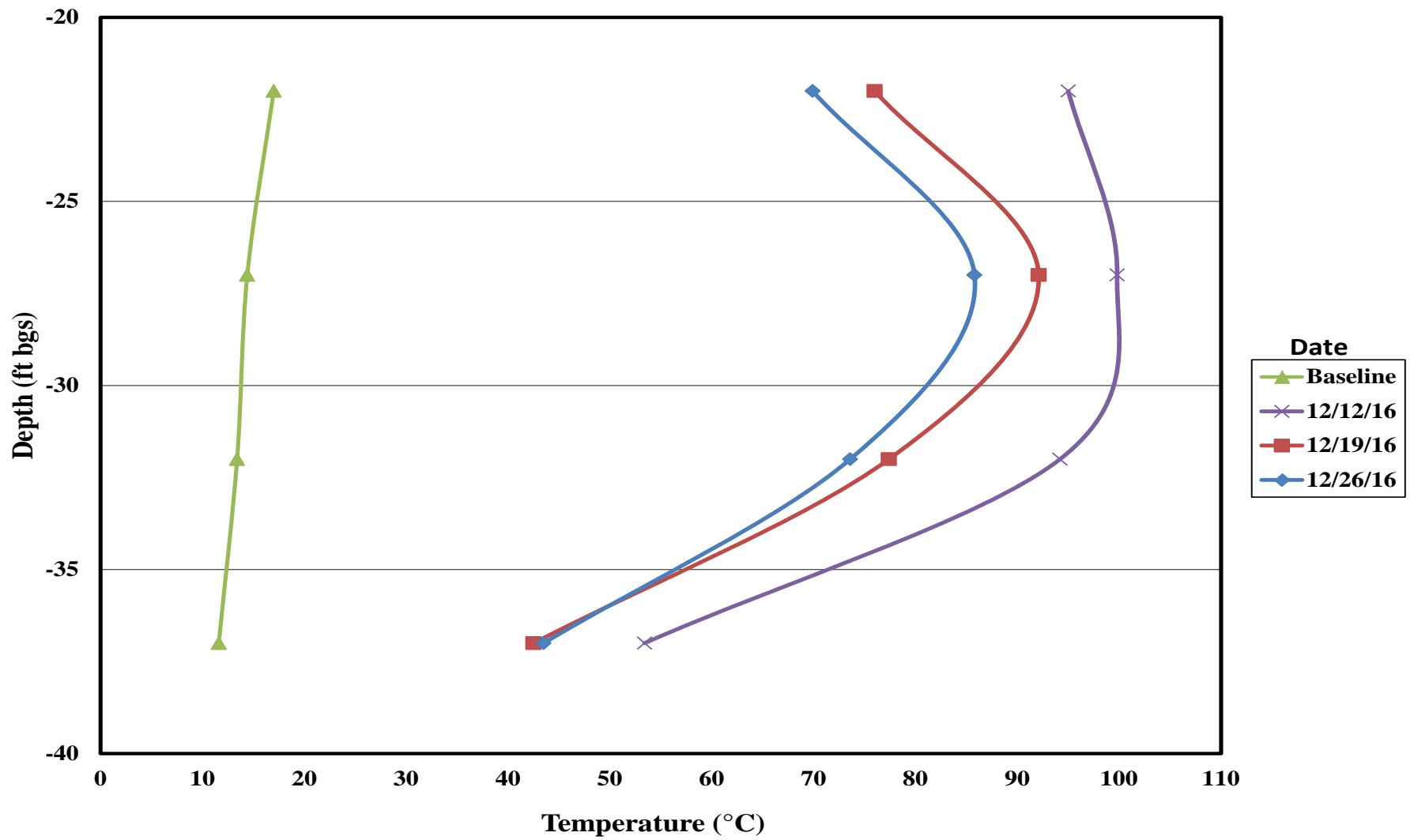


Figure 2a. TMP D3 Temperature vs. Depth

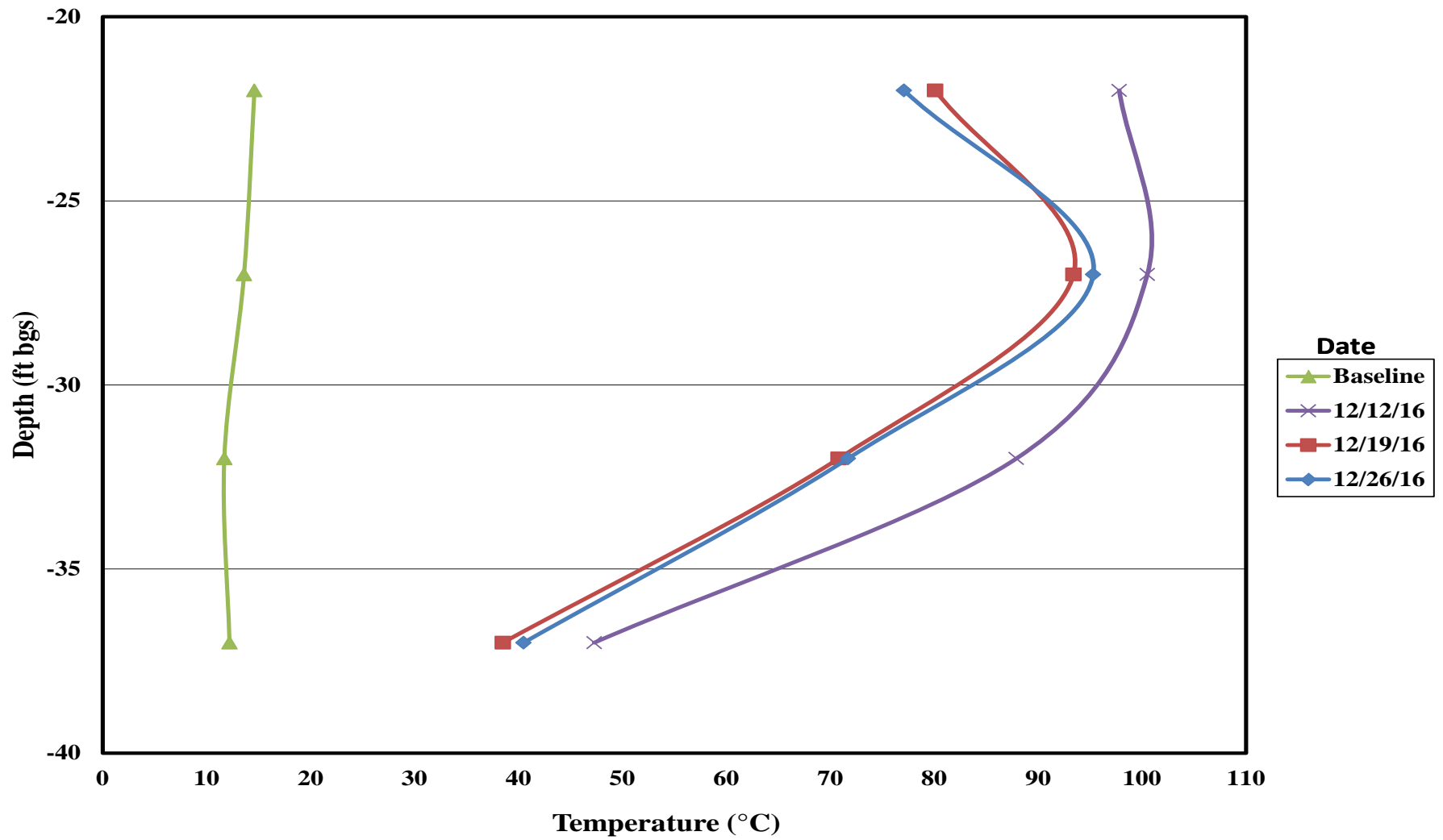


Figure 2b. TMP F4 Temperature vs. Depth



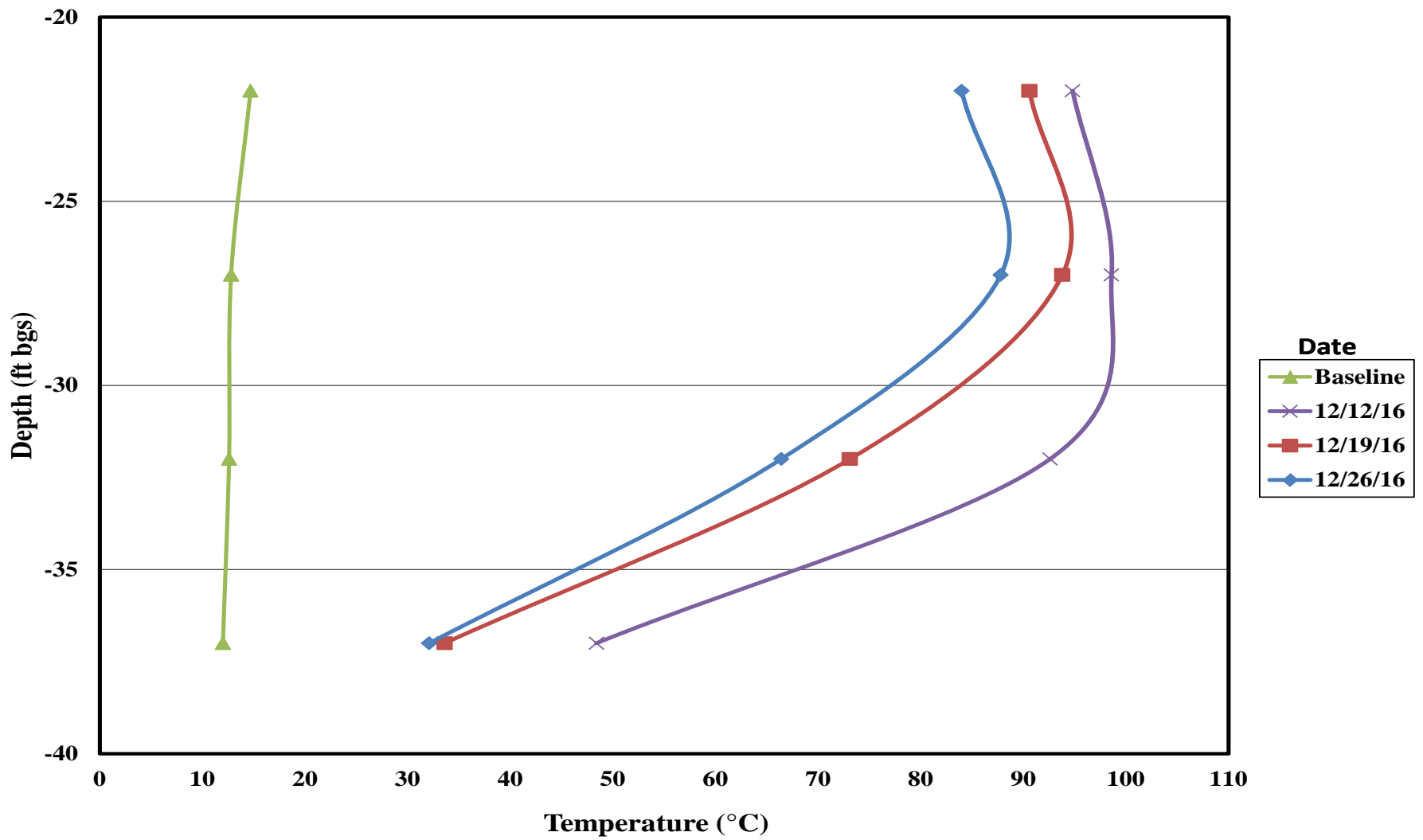


Figure 2c. TMP H3 Temperature vs. Depth

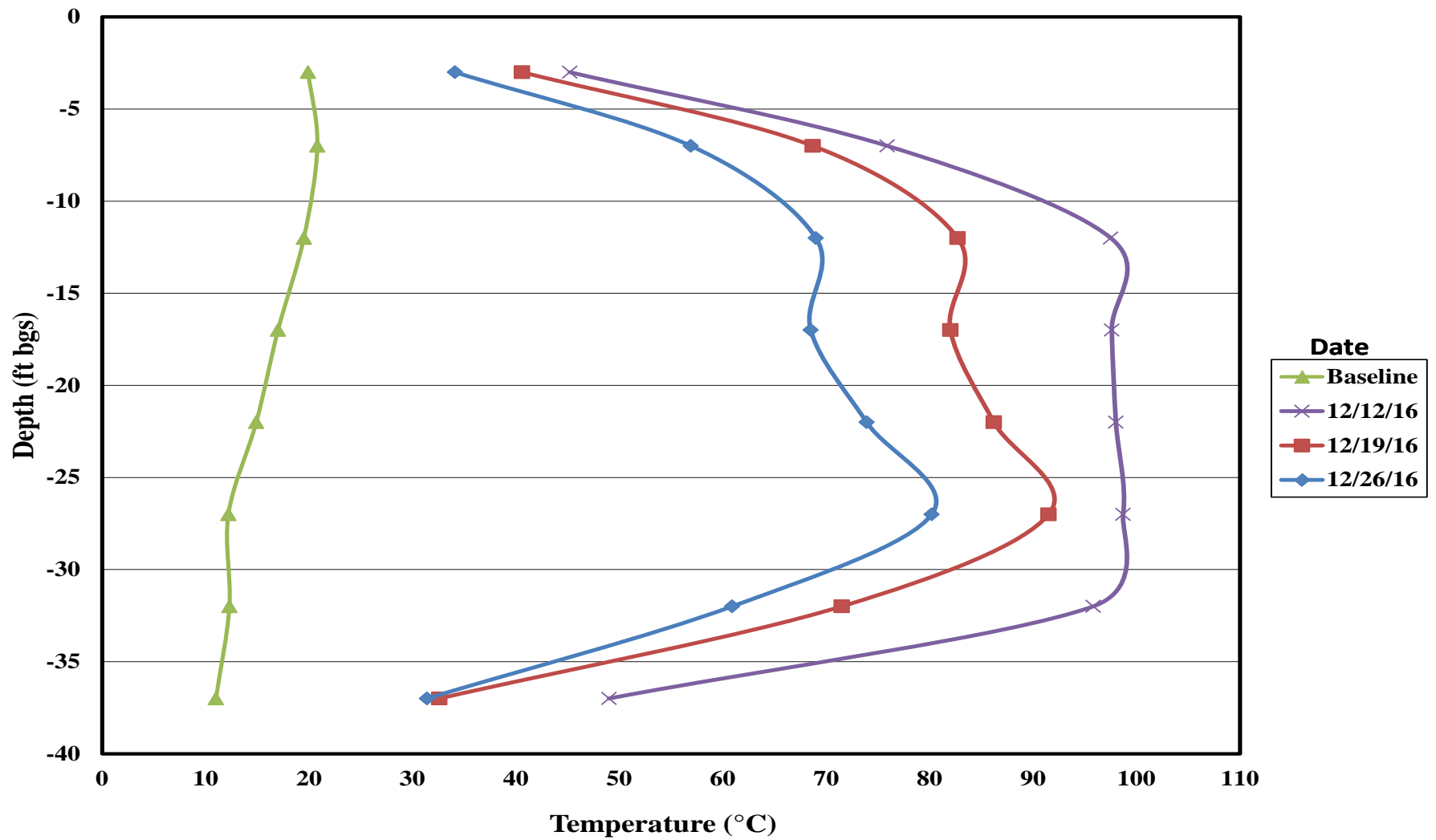


Figure 2d. TMP K4 Temperature vs. Depth

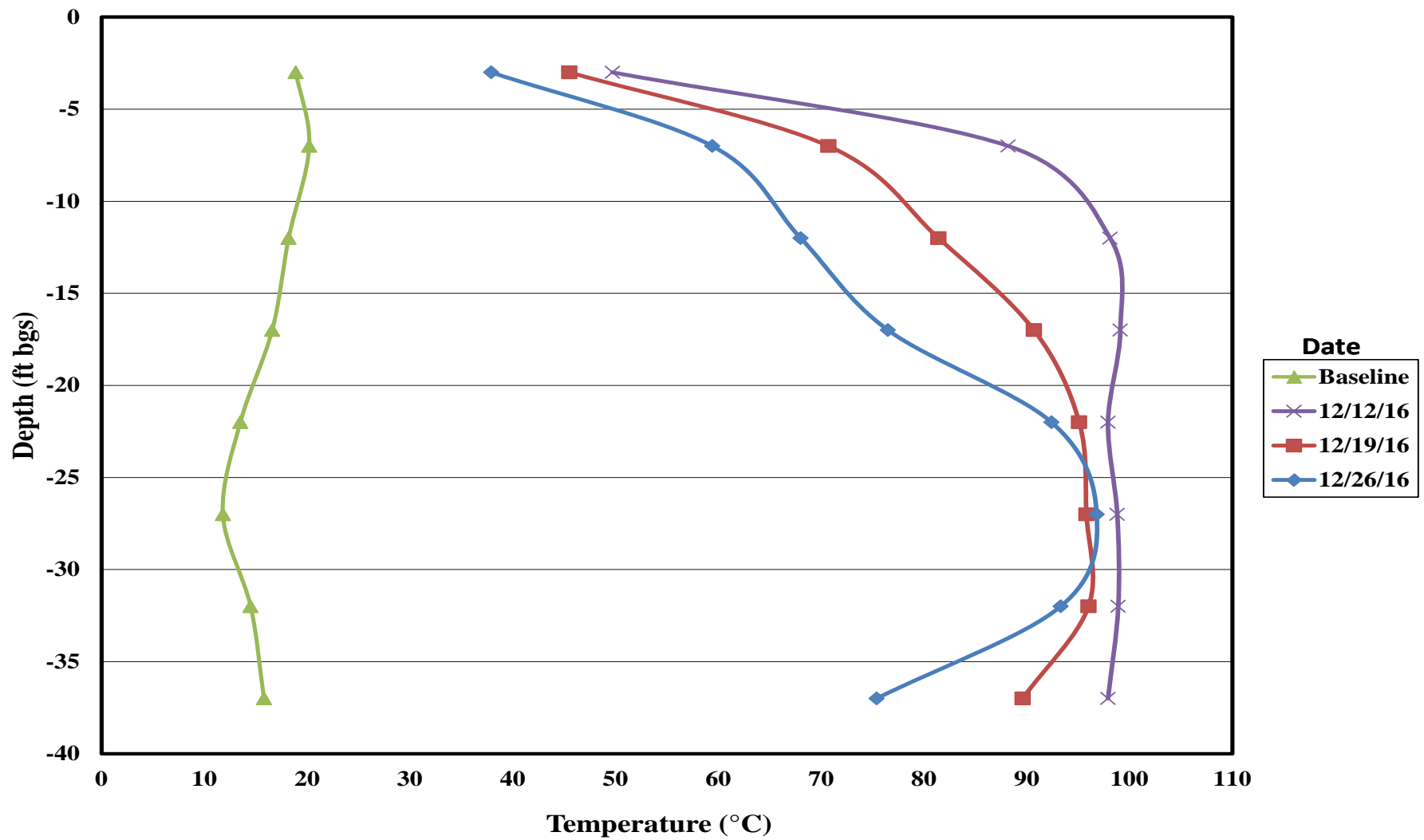
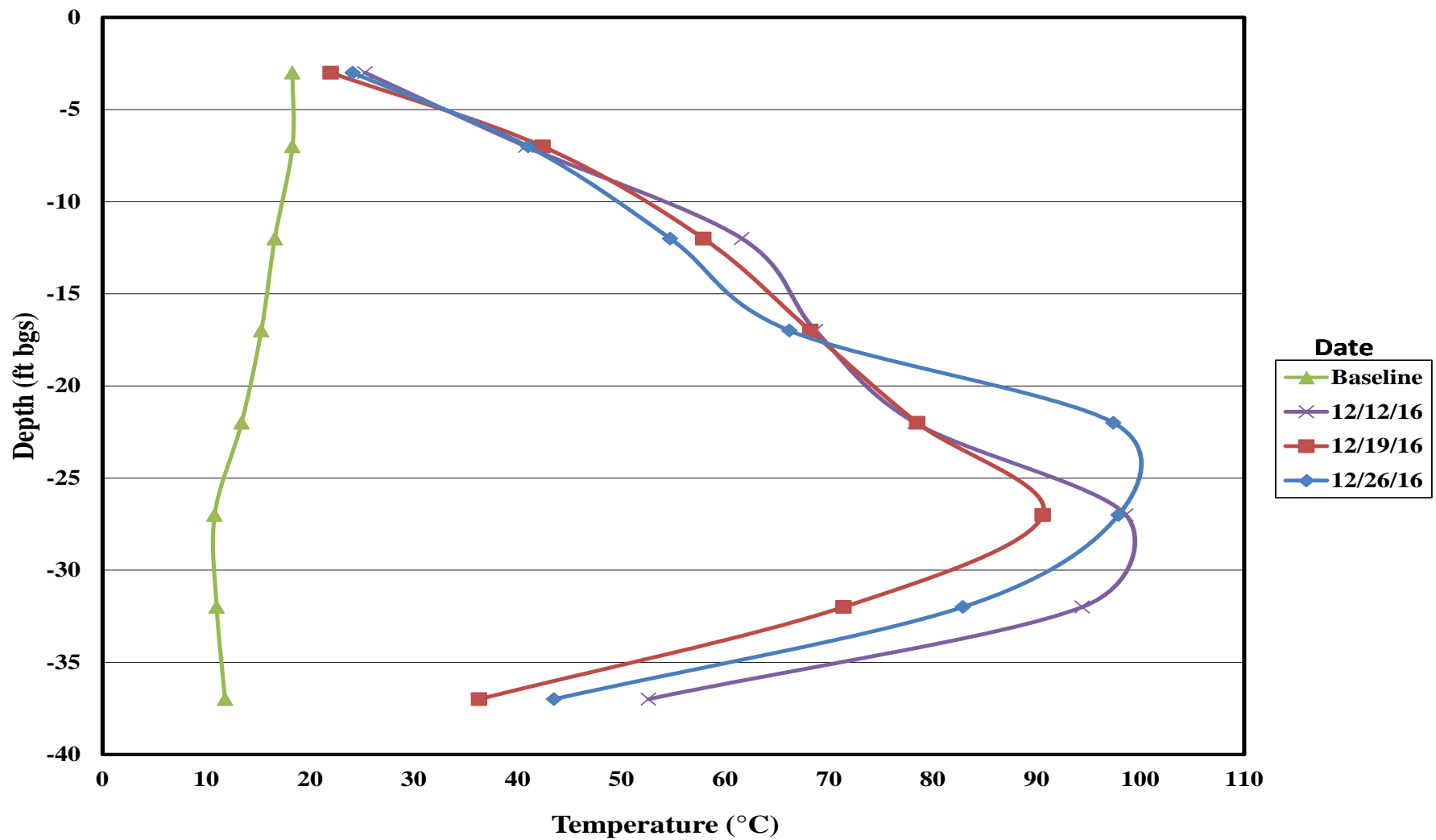


Figure 2e. TMP K5 Temperature vs. Depth



**Figure 2f.** TMP K7 Temperature vs. Depth



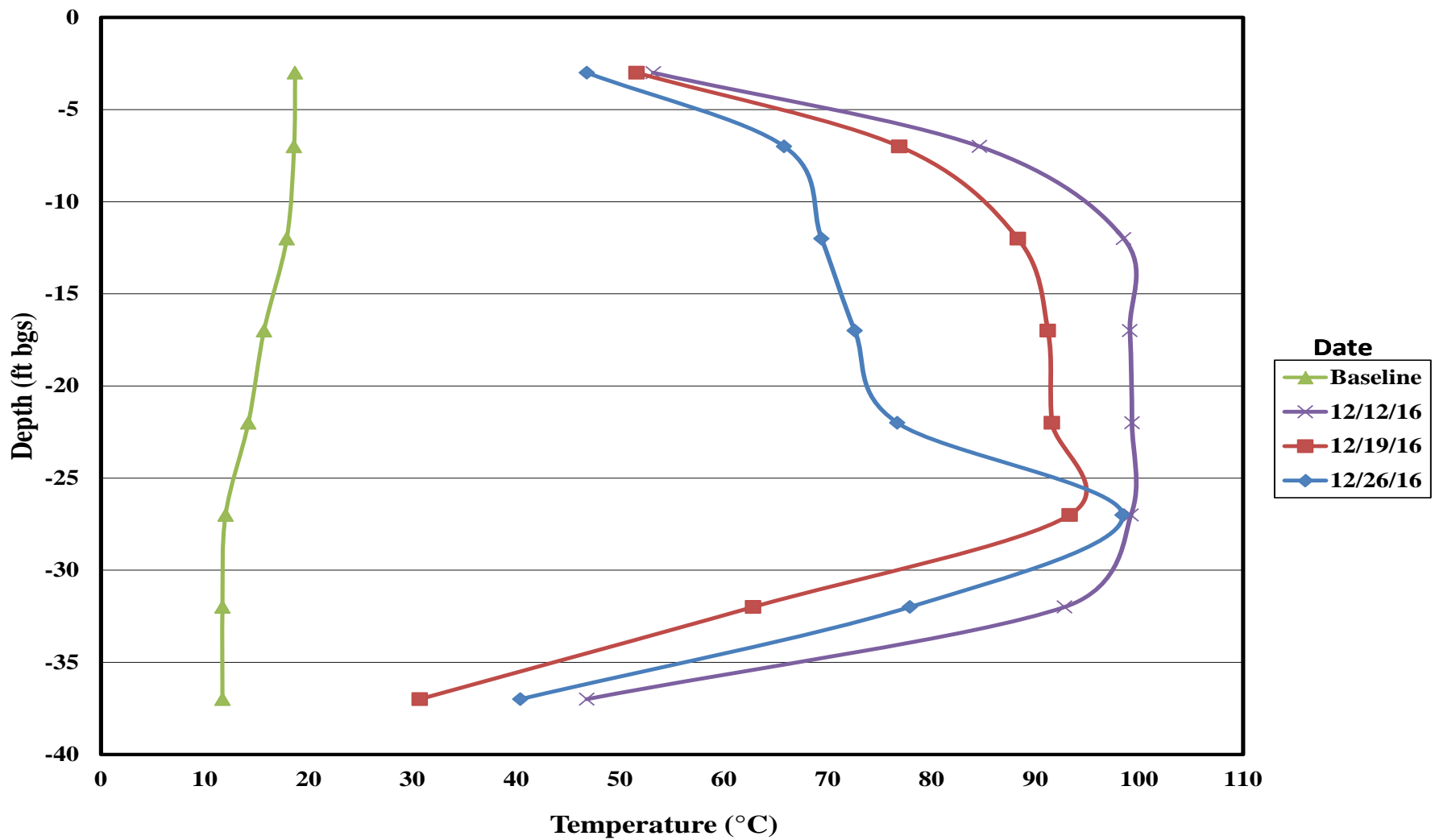
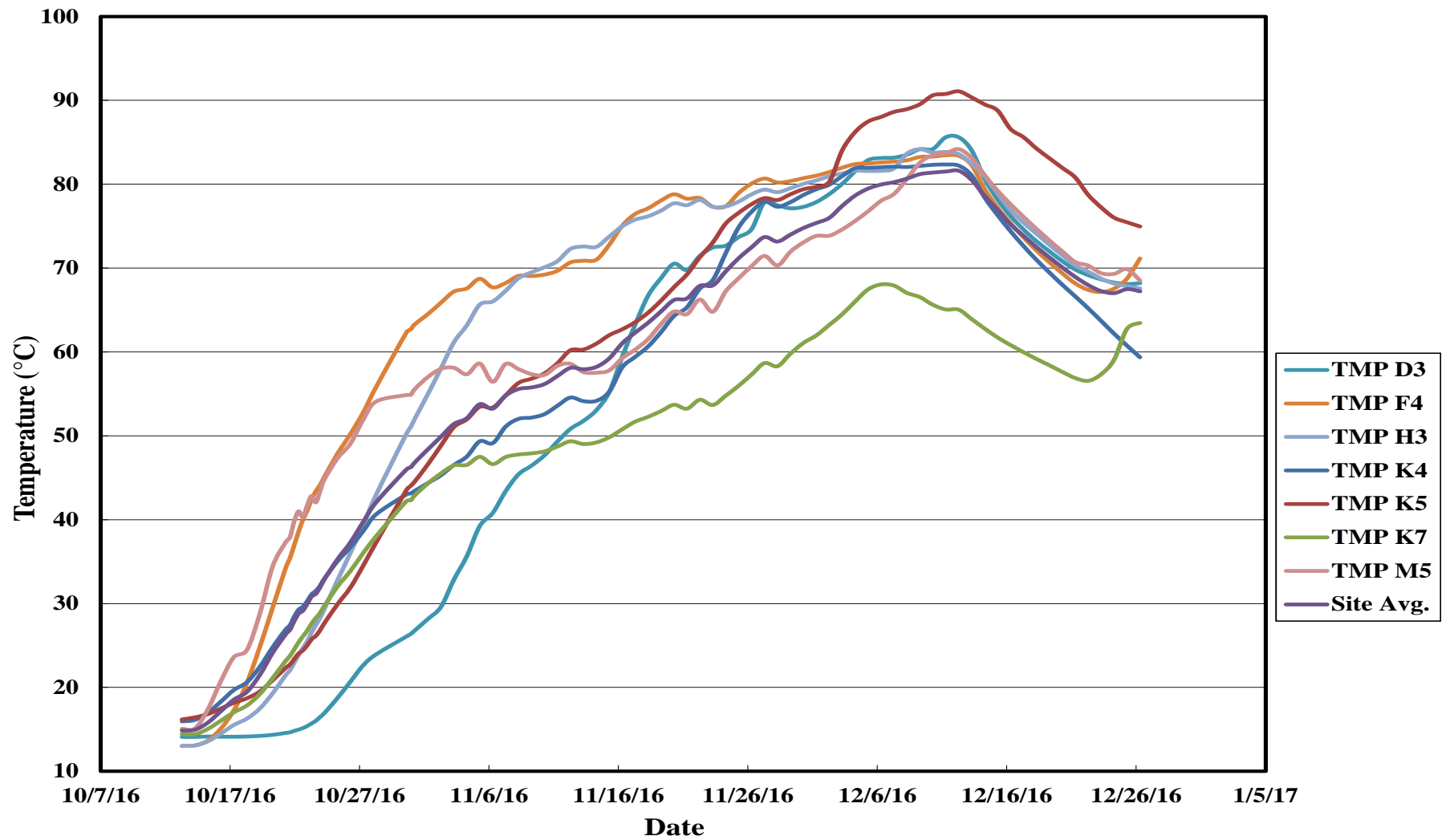
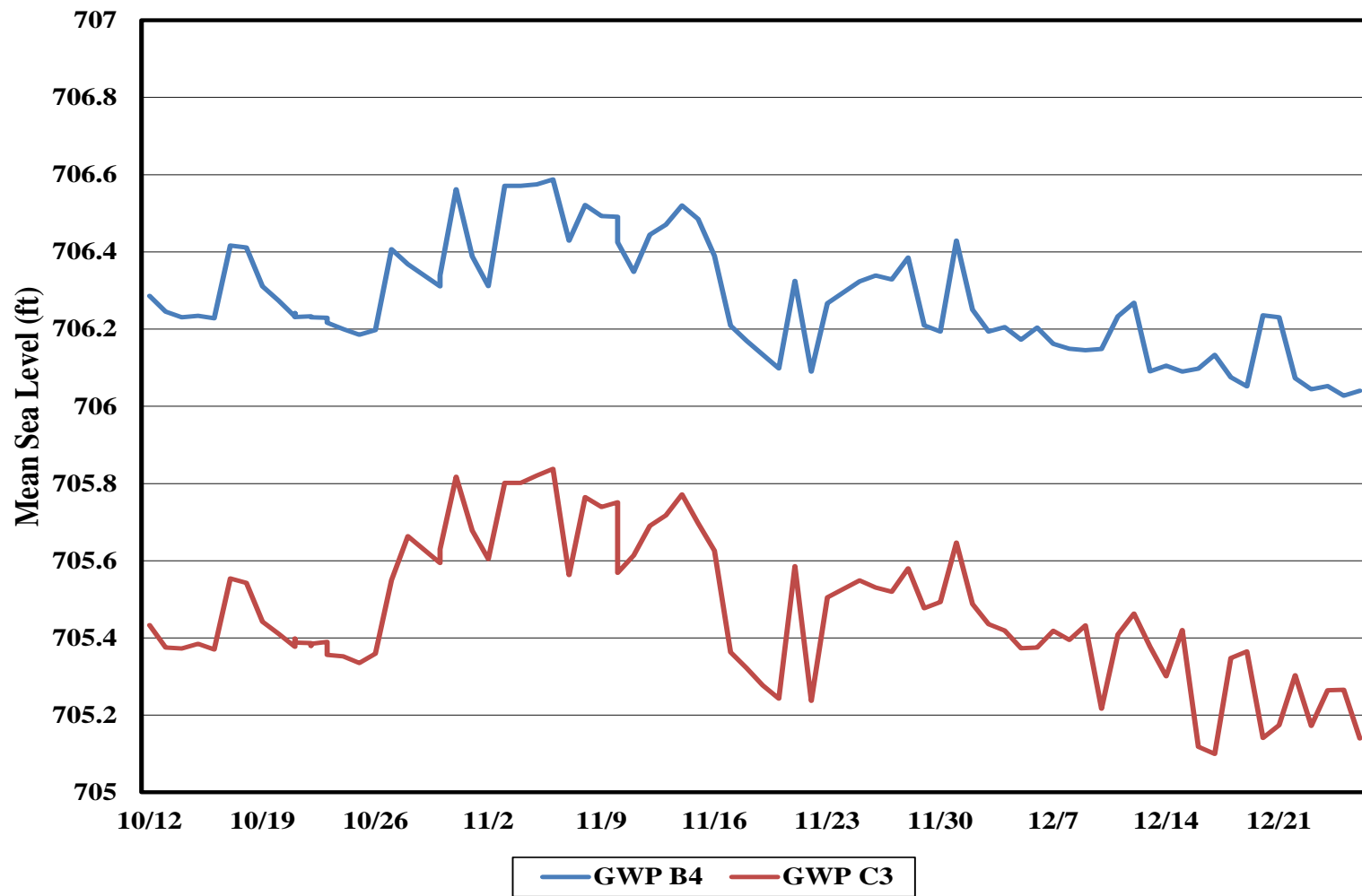


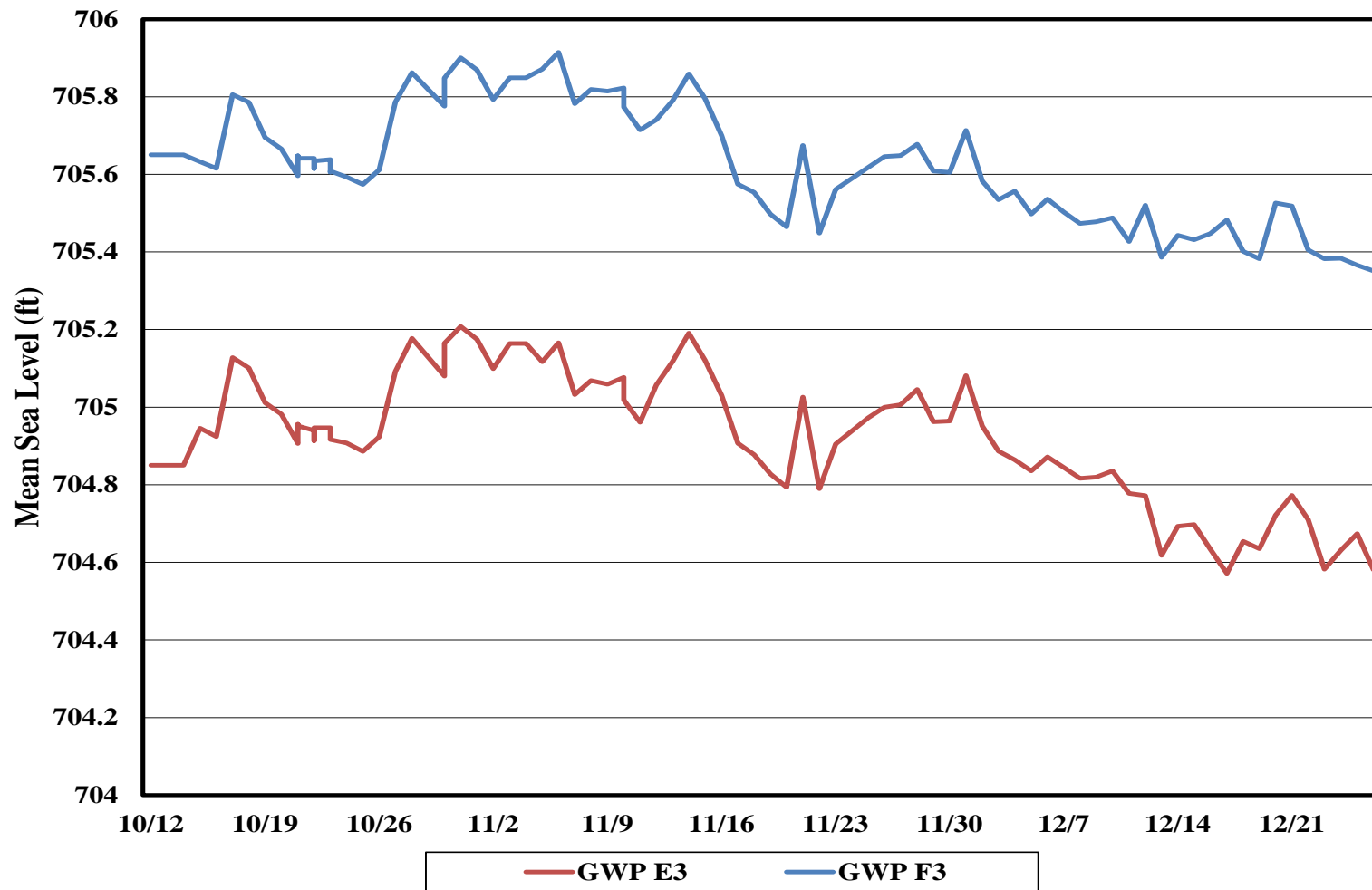
Figure 2g. TMP M5 Temperature vs. Depth



**Figure 3.** Subsurface Temperatures vs. Time



**Figure 4a.** GWP B4 and GWP C3



**Figure 4b.** GWP E3 and GWP F3



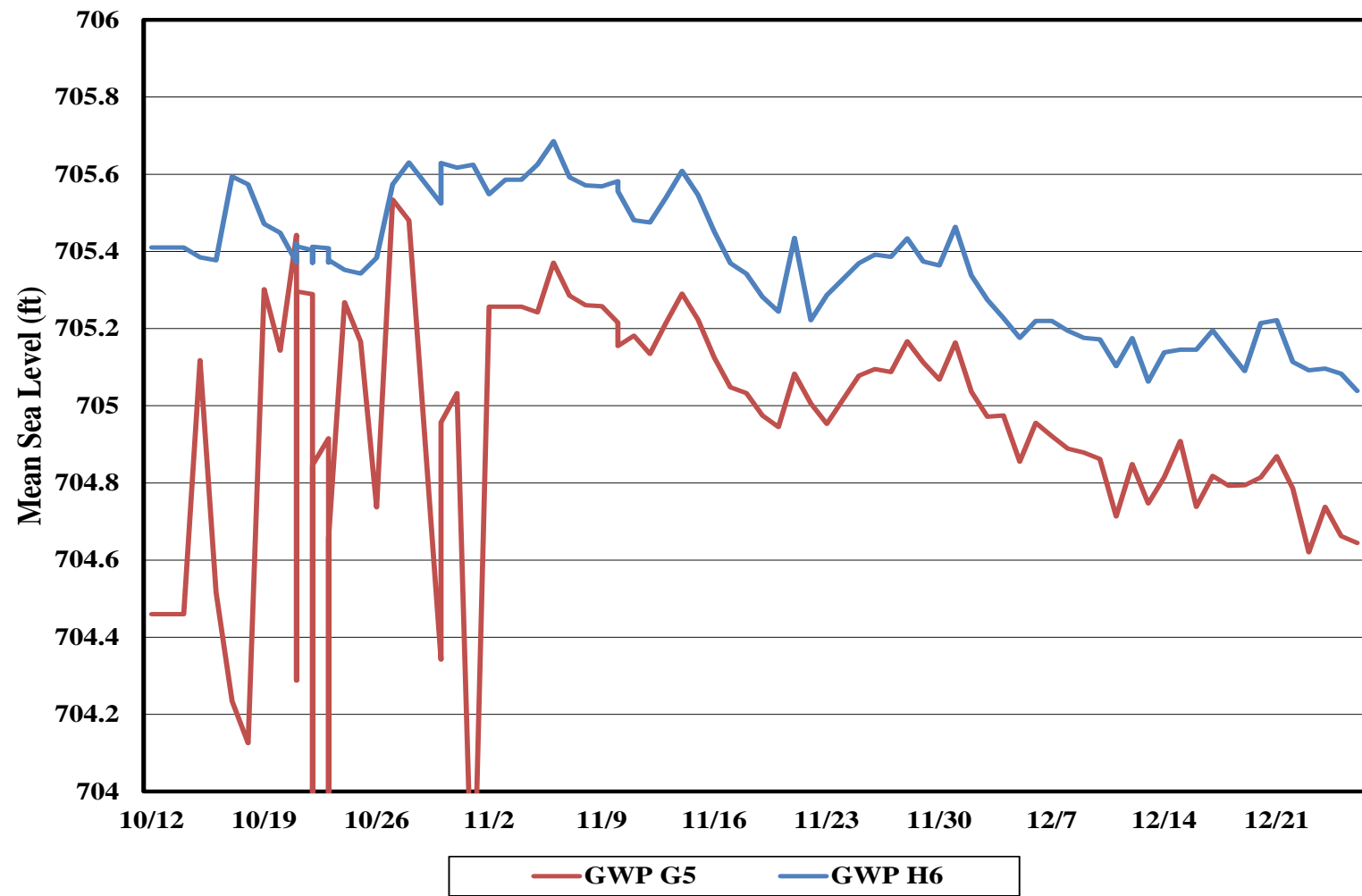


Figure 4c. GWP G5 and GWP H6

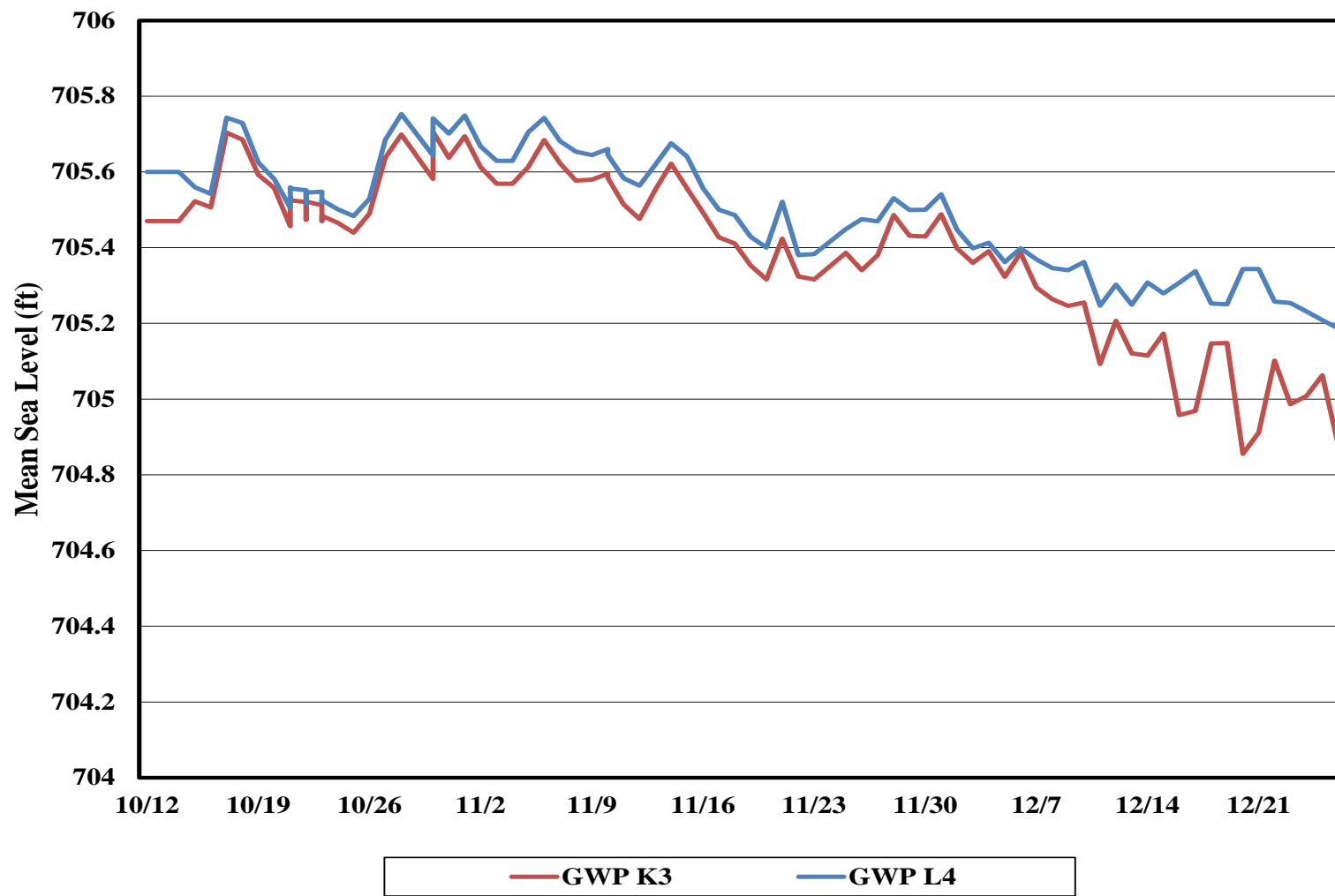


Figure 4d. GWP K3 and GWP L4

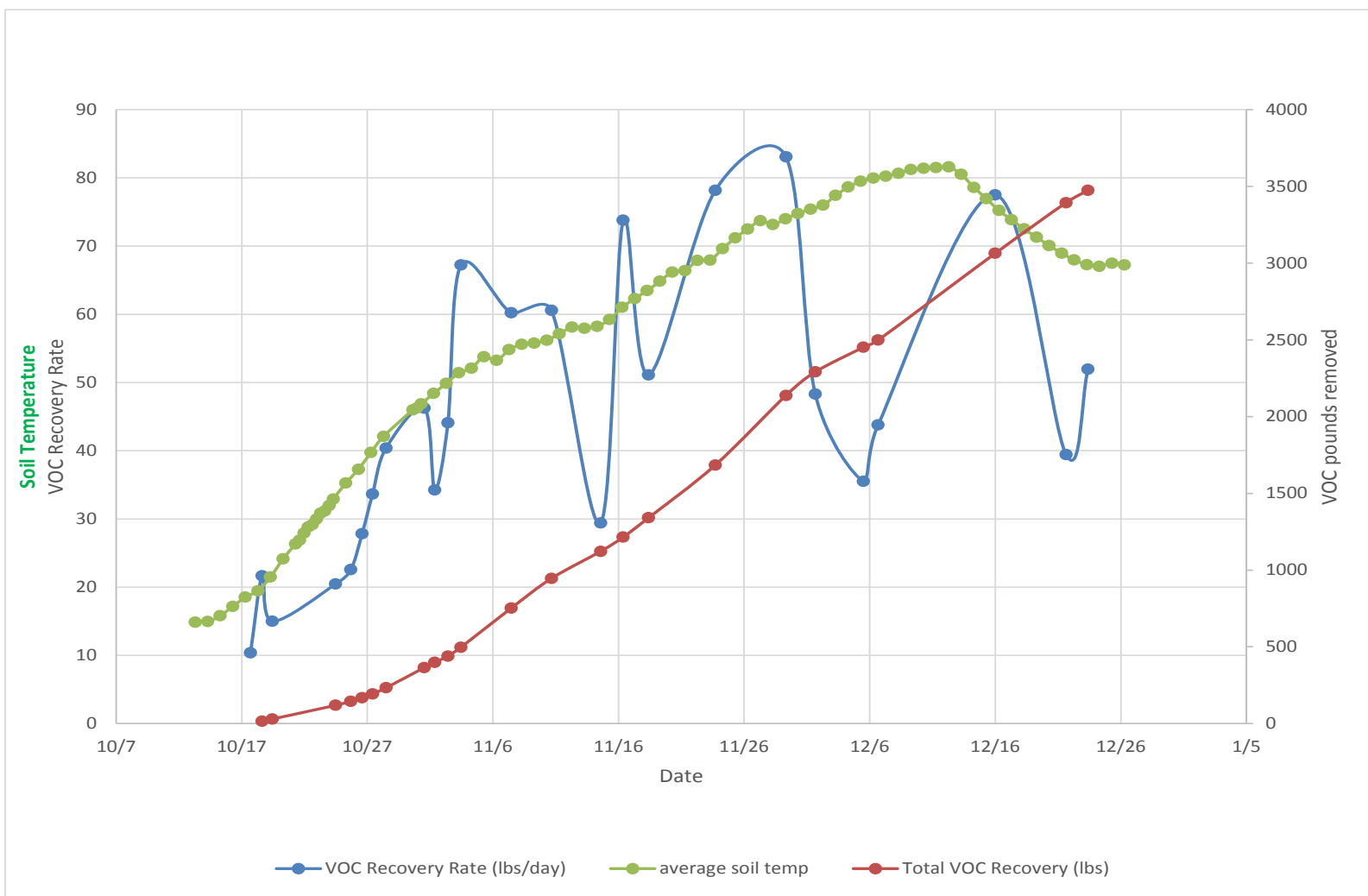


Figure 5. ERH Performance





TRS Group, Inc.  
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January 4, 2017

Mr. Brian Conrath  
Remedial Project Manager  
Illinois Environmental Protection Agency  
1021 N. Grand Ave. East  
Springfield, Illinois 62702  
(217) 557-8155  
Brian.Conrath@Illinois.gov

**Subject: ERH Weekly Report**  
**December 26, 2016 to January 2, 2017**  
**Southeast Rockford Groundwater Contamination Site Area 4**  
**2630 Marshall Street, Rockford, Illinois.**

Dear Mr. Conrath,

This letter report contains a brief description of the Electrical Resistance Heating (ERH) remediation operations performed at 2630 Marshall Street, Rockford, Illinois (the Site). The time period addressed in this report is from December 26 to January 2, 2017.

### **ERH Application Summary**

The ERH system operational parameters through January 2, 2017 are presented below in **Table 1**.

**Table 1. Key ERH System Operational Parameters**

<b>ERH System Parameters</b>	<b>December 26</b>	<b>January 2</b>
Weekly Average Power (kW)	272	432
Cumulative Energy Applied (kWh)	862,000	933,800
Average Subsurface Temperature (°C)	67.2	68.7
Average Vapor System Flow Rate (scfm)	824	883
Duration of System Shutdown (approximate hours)	50	0
Discharge to GETS flow rate (gpm)	0.5	0.7
Total water discharged to GETS	58,034	64,687

The ERH system did not experience any shut downs during the reporting period and the PCU, vapor recovery, and vapor abatement systems operated within design parameters during the reporting period.

### **Temperatures**

The average subsurface temperature in the treatment area increased from 67.2 degrees Celsius (°C) to 68.7°C during the reporting period. As mentioned in previous reports the areas requiring further



treatment happen to be located in areas without TMPs so significant temperature increases have not been recorded during the reporting period. TRS remains in the process of evaluating the installation of a TMP within the reduced focus area so that future temperature changes may be more closely observed. The highest individual temperature measurement within the treatment volume was 99.9°C. This was recorded at TMP location F4 at 27-feet below ground surface (ft bgs).

To illustrate the temperature change, the data is presented in seven separate graphs based on TMP location. Temperatures relative to depth for each TMP are presented in **Figures 2a** through **2g**. Average subsurface temperature over time is presented in **Figure 3**.

### **Power and Energy**

The PCU averaged 432 kilowatts (kW) of applied power to the treatment volume during the reporting period. A total of 933,800 kilowatt-hours (kWh) of energy have been applied to the subsurface as of January 2, 2017.

### **ERH Vapor Recovery**

During this reporting period, the average vacuum applied to the subsurface was approximately 5.5 inches of mercury (in Hg). The vapor stream flow rate, as measured after the vapor recovery blower, averaged 883 standard cubic feet per minute (scfm).

Vapor samples are collected from the influent and effluent of the vapor-phase granular activated carbon (VGAC) system whenever TRS is onsite. Analysis is performed using a photoionization detector (PID) MiniRae 3000. In accordance with the Work Plan, vapor samples are also collected once per week during the first four weeks of operations and then bimonthly thereafter. The vapor samples were sent offsite for analysis by Method TO-15, including a listing of tentatively identified compounds, in an attempt to quantify the heavier compounds recovered by the vapor recovery system. Of note, both 1,1,1-TCA and 1,1-DCE vapor concentrations have declined dramatically, while the heavier hydrocarbon compound recovery has increased.

The available results of the PID and TO-15 analysis can be found in the attached **Table 3**, **Table 4** and **Table 5**. The PID readings and TO-15 data confirm that the VGAC system is performing as designed and operating in accordance with the substantive discharge requirements. Based on PID readings, TRS estimates that approximately 3,473 pounds of volatile organic compounds (VOCs) have been removed from the treatment volume.

### **ERH Process Water**

During this reporting period, the ERH system discharged 6,653 gallons to the Groundwater Extraction and Treatment System (GETS) at an average rate of 0.7 gallon per minute (gpm). To date a total of 64,687 gallons has been discharged to the GETS. The water recovered by the ERH system is passed through a particulate filter and two liquid-phase granular activated carbon (LGAC) vessels arranged in series prior to discharge to the GETS. The water recovered and treated with LGAC prior to being sent to the GETS is now being analyzed for VOCs twice per month by an offsite laboratory. The results of these analyses are provided in **Table 6**. The LGAC system has been working as designed.

### **Groundwater and Vacuum Piezometers**

TRS collects vacuum piezometer readings at least once a week while onsite to illustrate full vacuum influence across the Site. TRS was not on site during the reporting period so no new readings were collected. The readings collected to date are presented in **Table 2**.

**Table 2 Site VP Readings (inches water column)**

Date/Time	VP-B4	VP-C2	VP-D4	VP-G4	VP-K5	VP-L4	VP-L7	VP-M6
10/14/16	1.0	1.0	3.0	8.0	8.5	3.0	3.0	4.0
10/18/16	1.5	1.5	4.0	8.8	8.0	3.0	3.3	3.5
10/24/16	1.5	1.5	3.5	5.5	6.5	2.5	3.0	3.0
11/2/16	1.5	1.5	4.0	5.0	6.5	2.5	3.0	3.5
11/10/16	1.0	1.0	4.5	5.0	7.0	2.5	2.5	3.5
11/15/16	1.0	1.0	4.0	4.5	7.0	3.0	2.5	3.0
11/21/16	1.5	1.5	3.5	5.0	6.5	3.0	3.0	3.0
11/29/16	1.0	1.0	3.0	4.5	6.0	2.5	2.5	3.0
12/5/16	1.5	1.5	4.0	5.0	6.0	3.0	3.0	3.0
12/14/16	1.0	1.0	3.5	4.5	5.5	2.5	2.5	2.5
12/21/16	1.0	1.0	4.0	4.5	5.5	3.0	2.5	3.0

In addition to the vacuum piezometer readings, TRS also collects groundwater elevation measurement readings daily through automated data collection. The groundwater elevation readings are presented graphically in **Figures 4a** through **4d**. As the readings show, there are fluctuations occurring within the piezometers, but the changes are consistent inside and outside the treatment volume, indicating hydraulic control.

The GETS operated with ground water pumping well EW1 online during this operational period, recovering about 30 gpm from the well. EW1 is located north of the treatment volume, on Marshall Street.

### **Planned Activities**

TRS personnel will visit the Site the week of January 2, 2017, to collect operations data, optimize the system, and perform weekly system maintenance.

Should you have any questions concerning this report, or if you would like any additional information, please contact either me or Chris Thomas by phone at (360) 560-7551 and (847) 376-3691, respectively.

Sincerely,  
TRS Group, Inc.



Bradley Morris  
Project Manager

Attachments: Table 3, 4, 5 - Vapor Concentrations  
Table 6 – LGAC performance  
Figure 1 – Site Plan  
Figure 2a – TMP D3 Temperature vs. Depth

Figure 2b – TMP F4 Temperature vs. Depth  
Figure 2c – TMP H3 Temperature vs. Depth  
Figure 2d – TMP K4 Temperature vs. Depth  
Figure 2e – TMP K5 Temperature vs. Depth  
Figure 2f – TMP K7 Temperature vs. Depth  
Figure 2g – TMP M5 Temperature vs. Depth  
Figure 3 – Subsurface Temperatures vs. Time  
Figure 4a – GWP B4 and C3  
Figure 4b – GWP E3 and F3  
Figure 4c – GWP G5 and H6  
Figure 4d – GWP K3 and L4  
Figure 5 – ERH Performance

cc/att: Chris Thomas, TRS  
Tim Warner, TRS

## **Attachments**



**Table 3 Vapor Influent and Effluent PID Monitoring Results**

Date	Blower Flow Rate (scfm)	Influent Conc (ppm)	Effluent Conc (ppm)	VOC Recovery Rate (lbs/day)	Total VOC Recovery (lbs)	VOC Discharge Rate (lbs/day)	Total HAPS Discharged (lbs)	Total VOC Discharged (lbs)	LAB Total VOC Recovery Rate (lbs/day)
10/17/16	830	25.6	0.0	10.4	0.0	0.0	0.0	0.0	
10/18/16	830	53.4	0.0	21.7	15.0	0.0	0.0	0.0	8.1
10/19/16	830	37.0	0.0	15.0	29.7	0.0	0.0	0.0	
10/24/16	834	50.2	0.0	20.5	119	0.0	0.0	0.0	
10/25/16	837	55.2	0.0	22.6	145	0.0	0.0	0.0	46.5
10/26/16	839	67.9	0.0	27.8	168	0.0	0.0	0.0	
10/27/16	850	81.0	0.0	33.6	193	0.0	0.0	0.0	
10/28/16	861	96.0	1.0	40.4	233	0.4	0.0	0.2	
10/31/16	860	110.0	3.0	46.2	365	1.3	0.2	2.8	
11/1/16	845	83.0	8.0	34.3	399	3.3	0.3	4.7	56.0
11/2/16	859	105.0	7.0	44.1	440	2.9	0.6	7.9	
11/3/16	860	160.0	15.0	67.2	497	6.3	0.9	12.8	
11/7/16	860	143.3	52.3	60.2	752	22.0	4.9	69.3	61.9
11/10/16	869	142.7	45.1	60.6	946	19.1	9.5	135	
11/14/16	860	70.0	53.0	29.4	1,122	22.3	15.1	216	
11/16/16	878	172.0	92.0	73.8	1,215	39.5	19.0	272	
11/18/16	824	127.0	82.0	51.1	1,341	33.0	24.1	345	
11/23/16	800	200.0	0.0	78.2	1,684	0.0	30.3	433	240.4
11/29/16	802	212.0	156.0	83.1	2,138	61.1	42.3	604	
12/1/16	719	138.0	122.0	48.3	2,291	42.8	50.1	726	
12/5/16	708	102.7	136.5	35.5	2,452	47.2	62.9	899	

Date	Blower Flow Rate (scfm)	Influent Conc (ppm)	Effluent Conc (ppm)	VOC Recovery Rate (lbs/day)	Total VOC Recovery (lbs)	VOC Discharge Rate (lbs/day)	Total HAPS Discharged (lbs)	Total VOC Discharged (lbs)	LAB Total VOC Recovery Rate (lbs/day)
12/6/16	711	126.1	123.0	43.8	2,498	42.7	66.6	951	50.9
12/16/16	770	206.0	202.0	77.5	3,064	76.0	105.3	1,505	
12/21/16	776	104	101	39.4	3,393	38.3	105.3	1,505	8.1
12/23/16	886	120	117	51.9	3,473	50.6	105.3	1,505	

**Table 4 TO 15 Influent to VGAC**

Date	1,1,1 TCA (ug/m3)	1,1 DCE (ug/m3)	1,1 DCA (ug/m3)	Other TO-15 (ug/m3)	Other as Decane (ug/m3)	Total VOCs (ug/m3)	Total VOC Recovery Rate (lbs/day)
10/18/16	100,000	280	3,400	5,450	NS	109,130	8
10/25/16	50,000	7,200	1,700	6,900	469,690	620,095	47
11/1/16	53,000	29,000	430	23,670	633,670	739,770	56
11/7/16	13,000	16,000	2,800	21,625	749,022	802,447	62
11/23/16	1,800	1,800	590	121,860	5,330,521	5,456,571	391
12/6/16	540	2,000	210	20,610	774,873	798,233	51
12/22/16	200	150	18	9,396	106,610	116,374	8

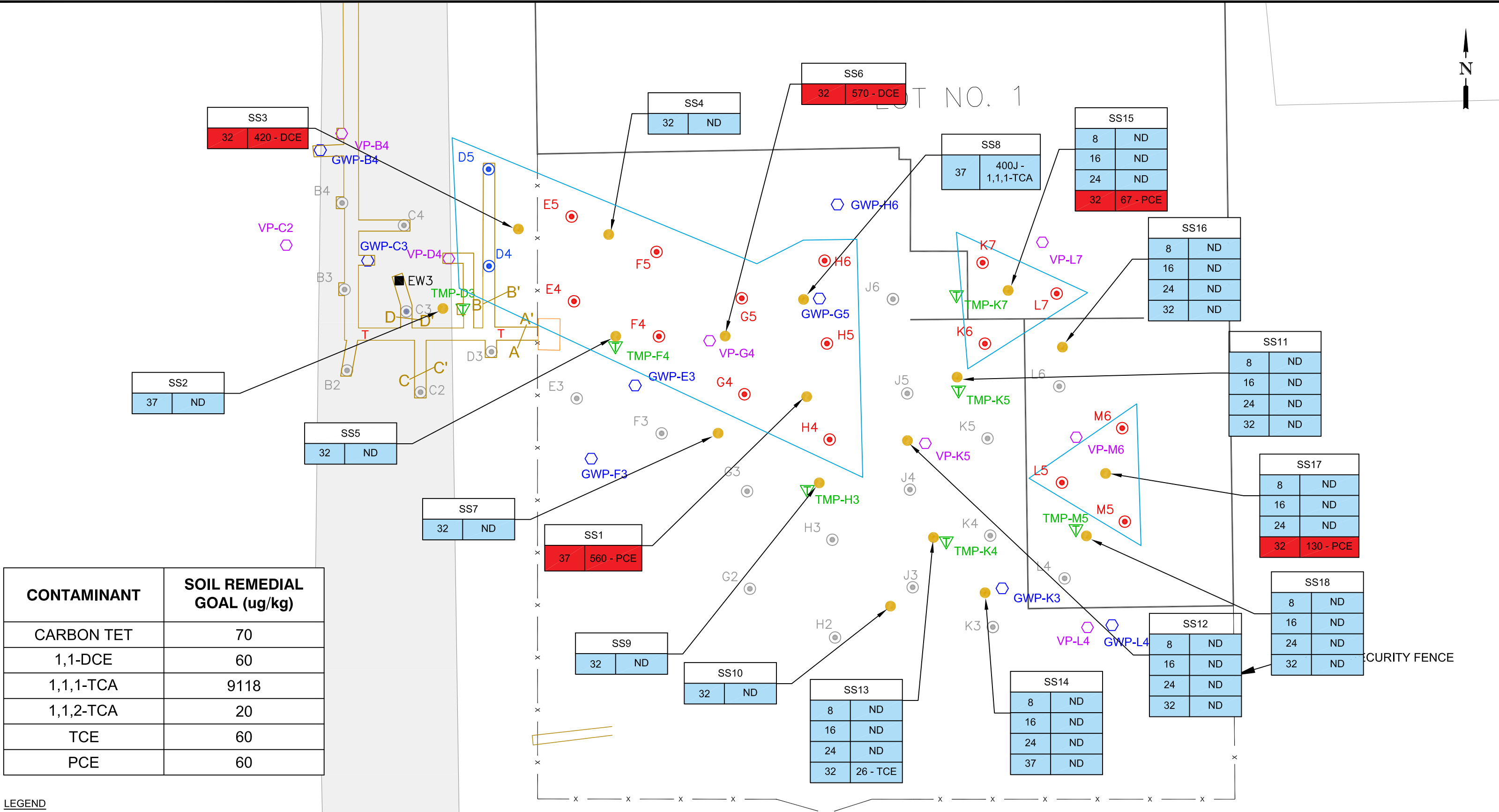
Table 5 TO 15 Effluent from VGAC

Date	1,1,1 TCA Conc. (ug/m3)	1,1 DCE Conc. (ug/m3)	1,1 DCA Conc. (ug/m3)	Other TO-15 (ug/m3)	Other as Decane (ug/m3)	Total VOCs (ug/m3)	Total HAPS Discharge Rate (lb/day)	Total VOC Discharge Rate (lb/day)
10/18/16	47	ND	ND	410	NS	457	0.03	0
10/25/16	5,200	110	430	17	NS	5,757	0.43	0
11/1/16	72,000	8,300	ND	ND	NS	80,300	6.08	6
11/7/16	100,000	15,000	5,800	1,370	NS	122,170	9.42	9
11/23/16	79	48	15	233	20,532	20,907	0.03	2
12/6/16	1,200	3,200	120	6,600	860,440	871,561	0.71	56
12/22/16	300	230	34	11,476	233,921	245,961	0.84	17

**Table 6 LGAC and GETS discharge data**

	10/18/16	10/25/16	11/1/16	11/7/16	11/23/16	12/6/16	12/22/16
Temperature (F)	75	80	85	84	85	57	--
pH	8.1	8.0	8.6	9	8.1	9.0	--
Pre LGAC Carbon Tetrachloride	ND	ND	ND	ND	ND	ND	ND
Pre LGAC DCE	ND	8.4	17	15.0	ND	ND	ND
Pre LGAC 1,1,1 - TCA	47	110	69	24	2.6	ND	ND
Pre LGAC 1,1,2 - TCA	0	1.5	2	2	ND	ND	ND
Pre LGAC TCE	ND	1.1	1	0,72	ND	ND	ND
Pre LGAC PCE	ND	ND	ND	1	ND	ND	ND
Pre LGAC Total Contaminants Concentration	248	457	300	1,014	4,446	1,718	6,282
Mid LGAC Carbon Tetrachloride	ND	ND	ND	LGAC off	ND	ND	ND
Mid LGAC DCE	ND	ND	ND		ND	ND	ND
Mid LGAC 1,1,1 - TCA	ND	ND	ND		2.5	1.2	ND
Mid LGAC 1,1,2 - TCA	ND	ND	ND		ND	ND	ND
Mid LGAC TCE	ND	ND	ND		ND	ND	ND
Mid LGAC PCE	ND	ND	ND		ND	ND	ND
Mid LGAC Total Contaminants Concentration	191	193	0		1,503	932	5,368
Post LGAC Carbon Tetrachloride	ND	ND	ND	LGAC off	ND	ND	ND
Post LGAC DCE	ND	ND	ND		ND	ND	ND
Post LGAC 1,1,1 - TCA	ND	ND	ND		ND	ND	ND
Post LGAC 1,1,2 - TCA	ND	ND	ND		ND	ND	ND
Post LGAC TCE	ND	ND	ND		ND	ND	ND
Post LGAC PCE	ND	ND	ND		ND	ND	ND
Post LGAC Total Contaminants Concentration	249.0	214.9	24		228	485	3,683





CONTAMINANT	SOIL REMEDIAL GOAL (ug/kg)
CARBON TET	70
1,1-DCE	60
1,1,1-TCA	9118
1,1,2-TCA	20
TCE	60
PCE	60

LEGEND

ELECTRODE (QTY 30)

BELOW GRADE ELECTRODE (QTY 9)

TEMPERATURE MONITORING POINT (QTY 7)

VAPOR PIEZOMETER (QTY 8)

EXISTING EXTRACTION WELL TO BE COOLED

TEMPERATURE SENSING DEVICE FOR TRENCH MONITORING

GROUNDWATER PIEZOMETER (QTY 8)

A-A'

TRENCH CROSS SECTION LOCATION

081632

SCALE IN FEET

DANIEL W. OBERLE  
062.066003  
OF ILLINOIS

06/15/16

ENGINEER SIGNATURE / DATE

TRS

Accelerating Value

TRS GROUP, INC. 338 COMMERCE AVE., SUITE 304, LONGVIEW, WA 98632

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DESIGNED BY  
C. LANSING

DRAWN BY  
A. WAGNER

CHECKED BY  
D. OBERLE

PROJECT MANAGER  
B. MORRIS

QSAT REVIEW  
06/06/16

SITE LOCATION  
CLIENT

SOUTHEAST ROCKFORD AREA 4  
ROCKFORD, ILLINOIS  
IL, EPA

FIGURE 1

APPROVED FOR CONSTRUCTION

BY 

Daniel Oberle

DATE 06/15/16

DATE 05/20/2016

PROJECT RFD75

SHEET

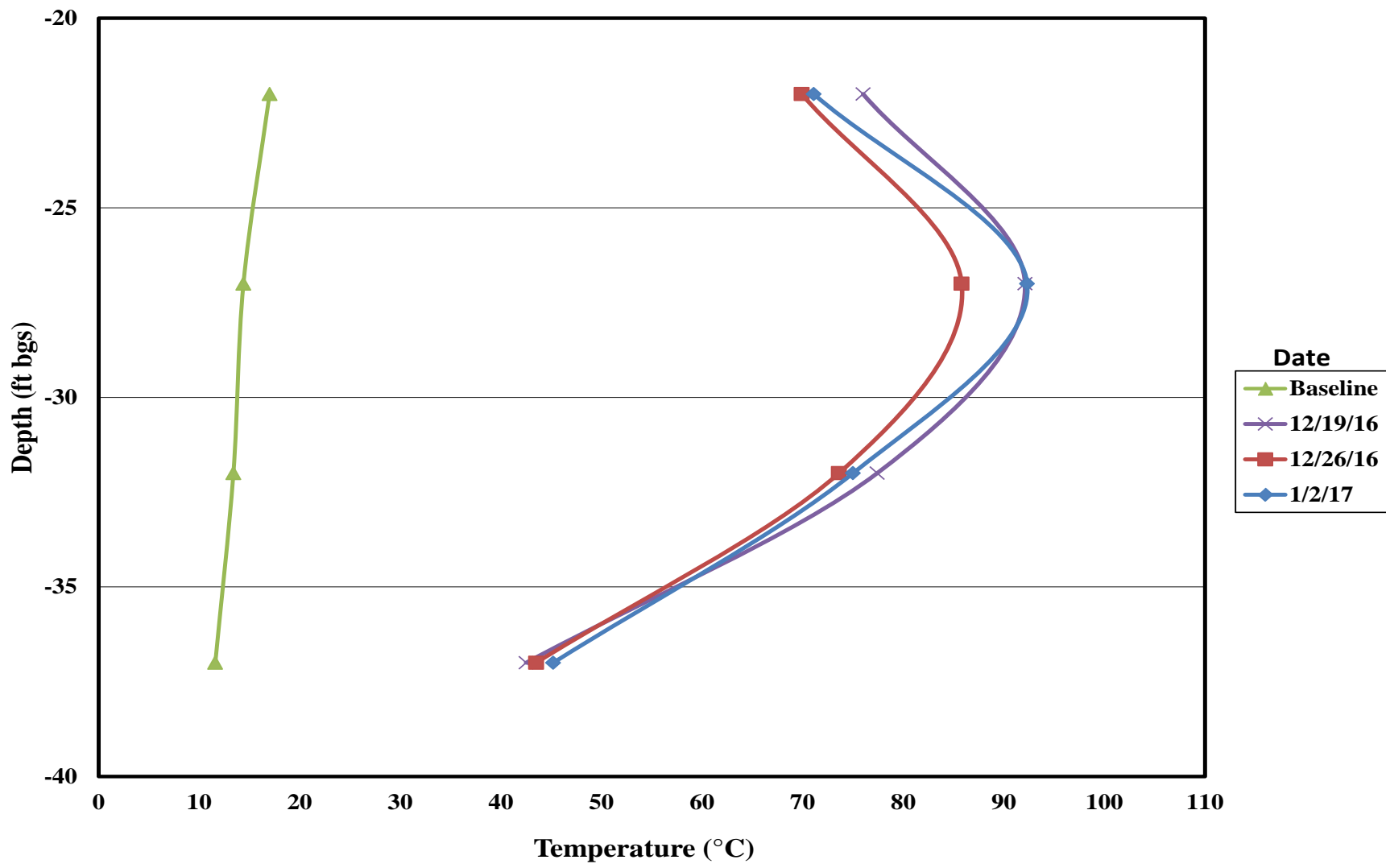
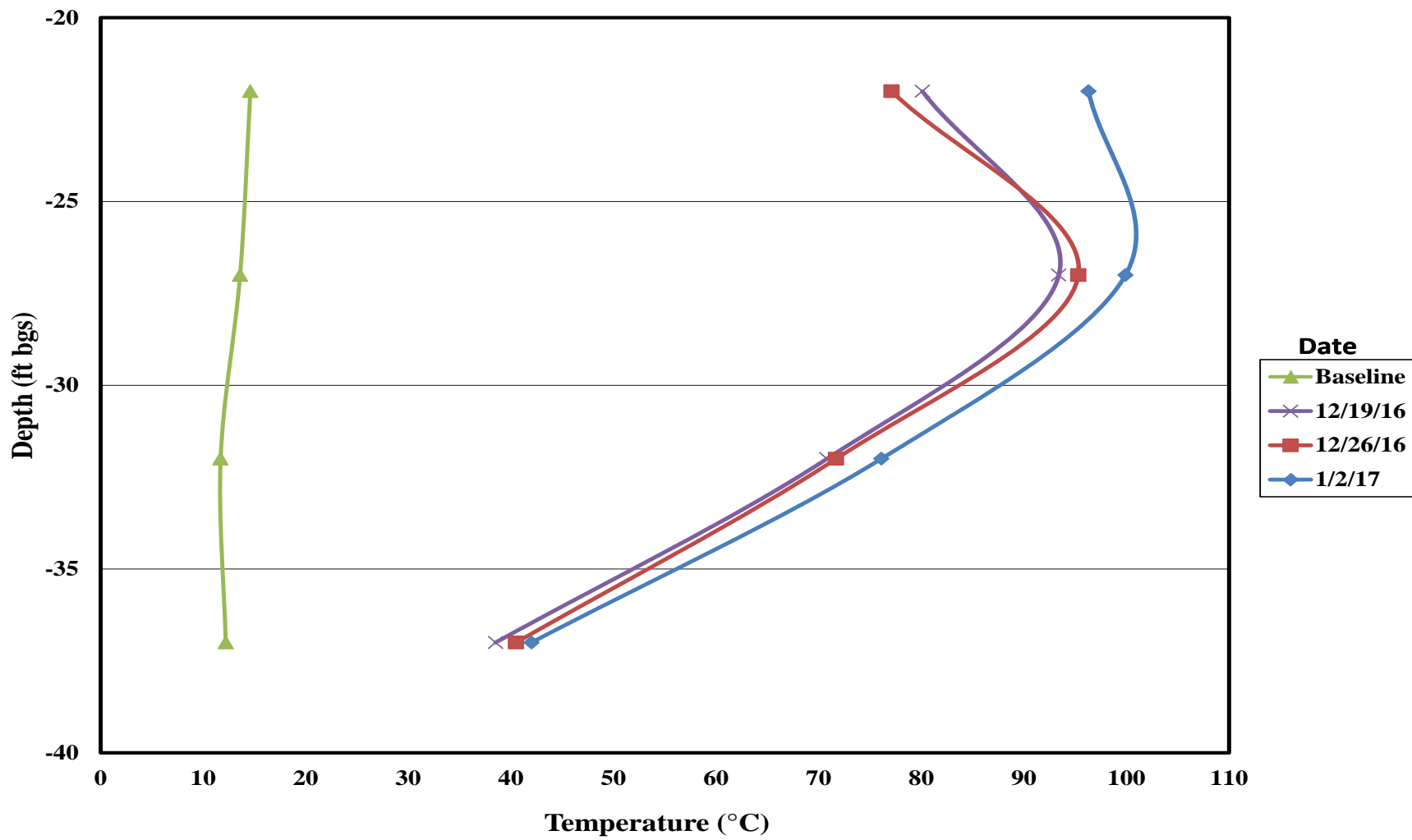


Figure 2a. TMP D3 Temperature vs. Depth



**Figure 2b.** TMP F4 Temperature vs. Depth

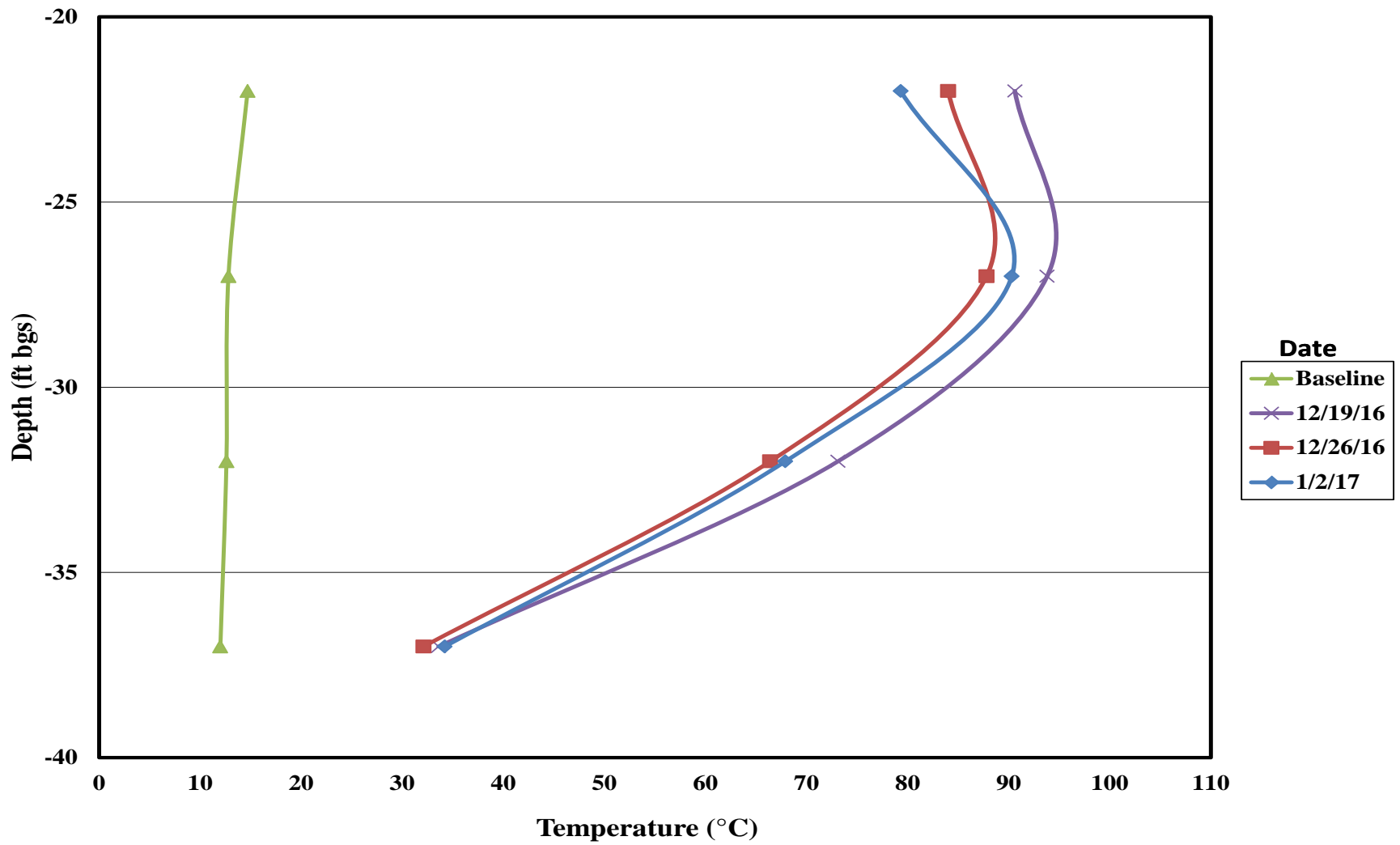


Figure 2c. TMP H3 Temperature vs. Depth



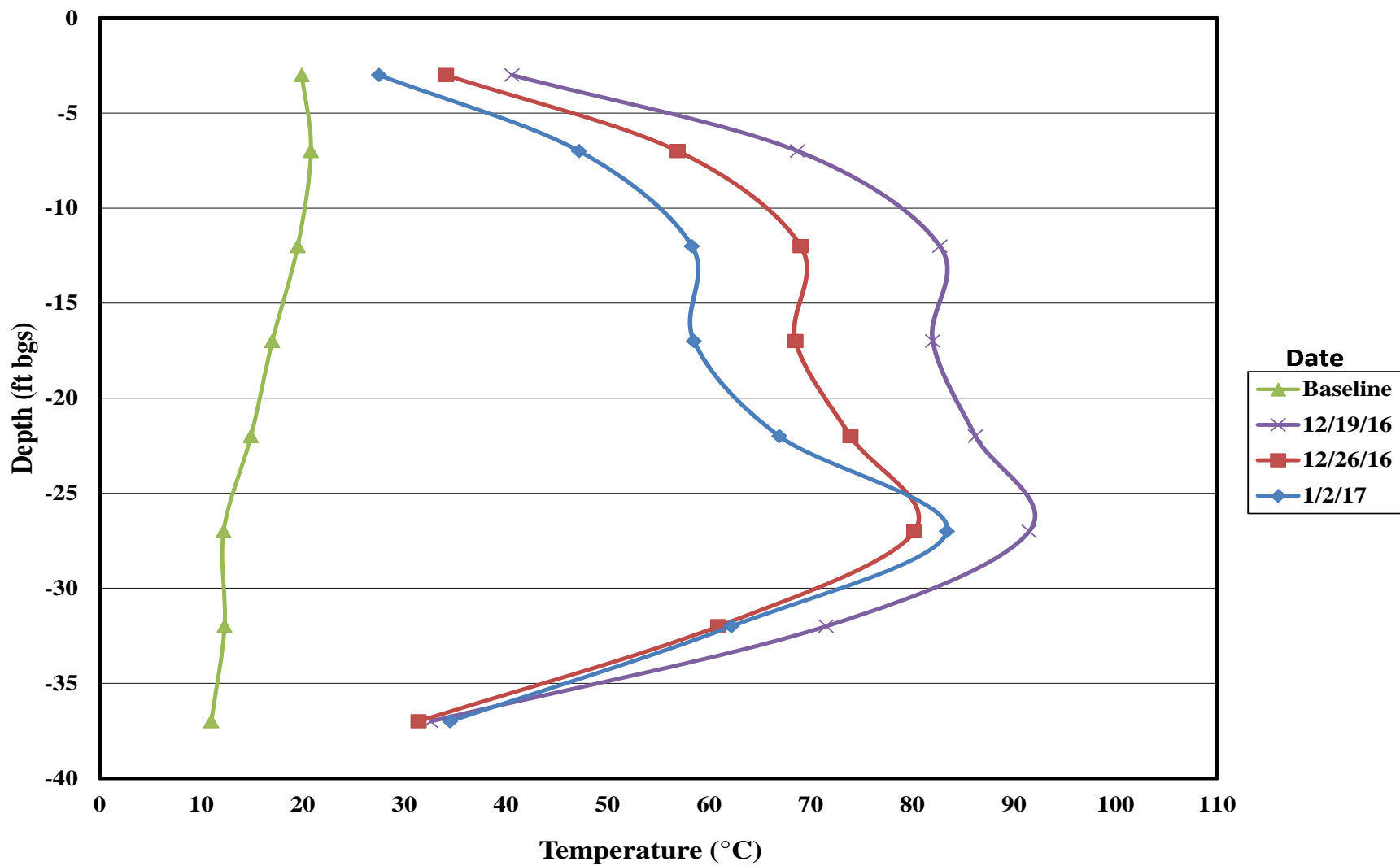


Figure 2d. TMP K4 Temperature vs. Depth

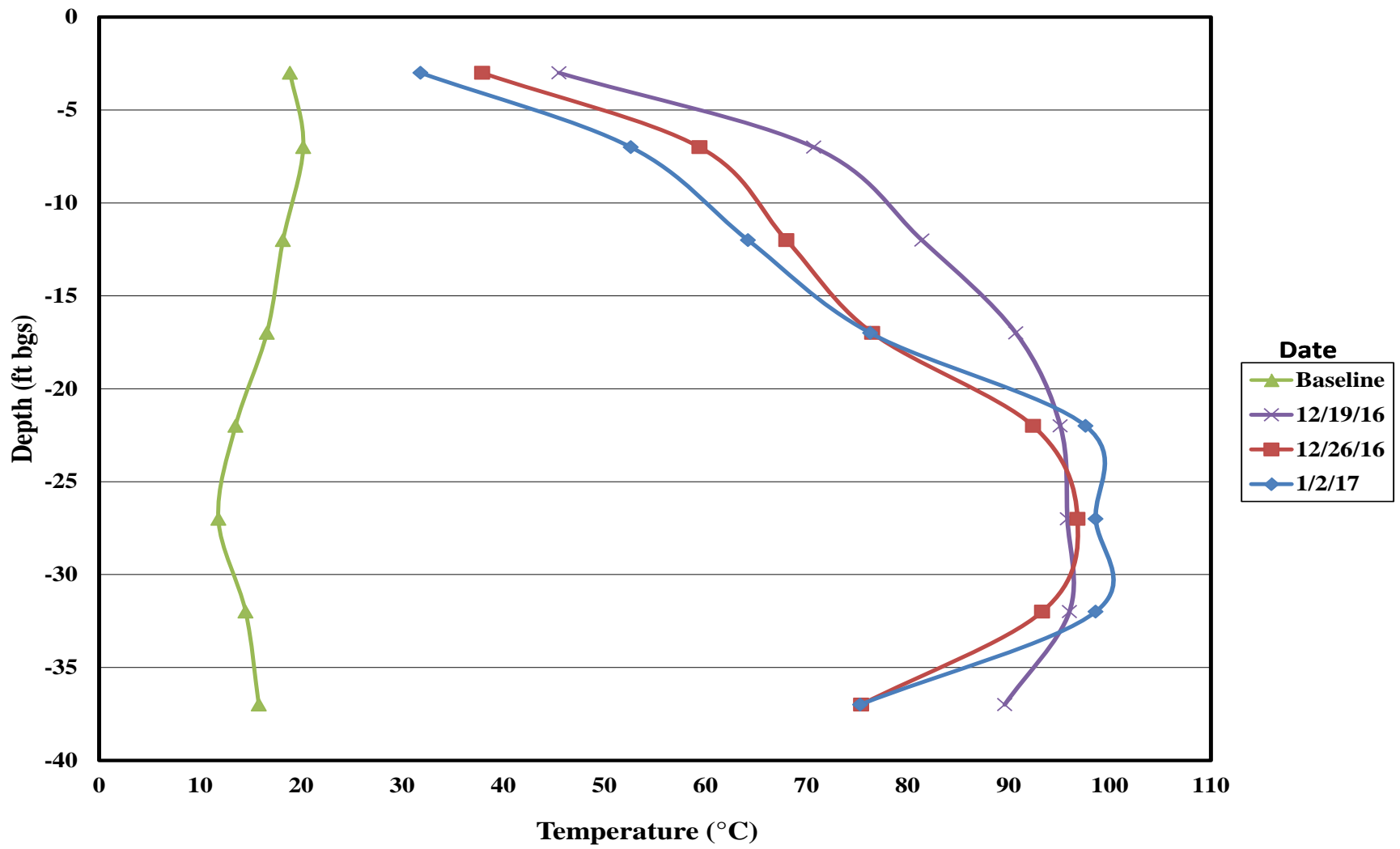
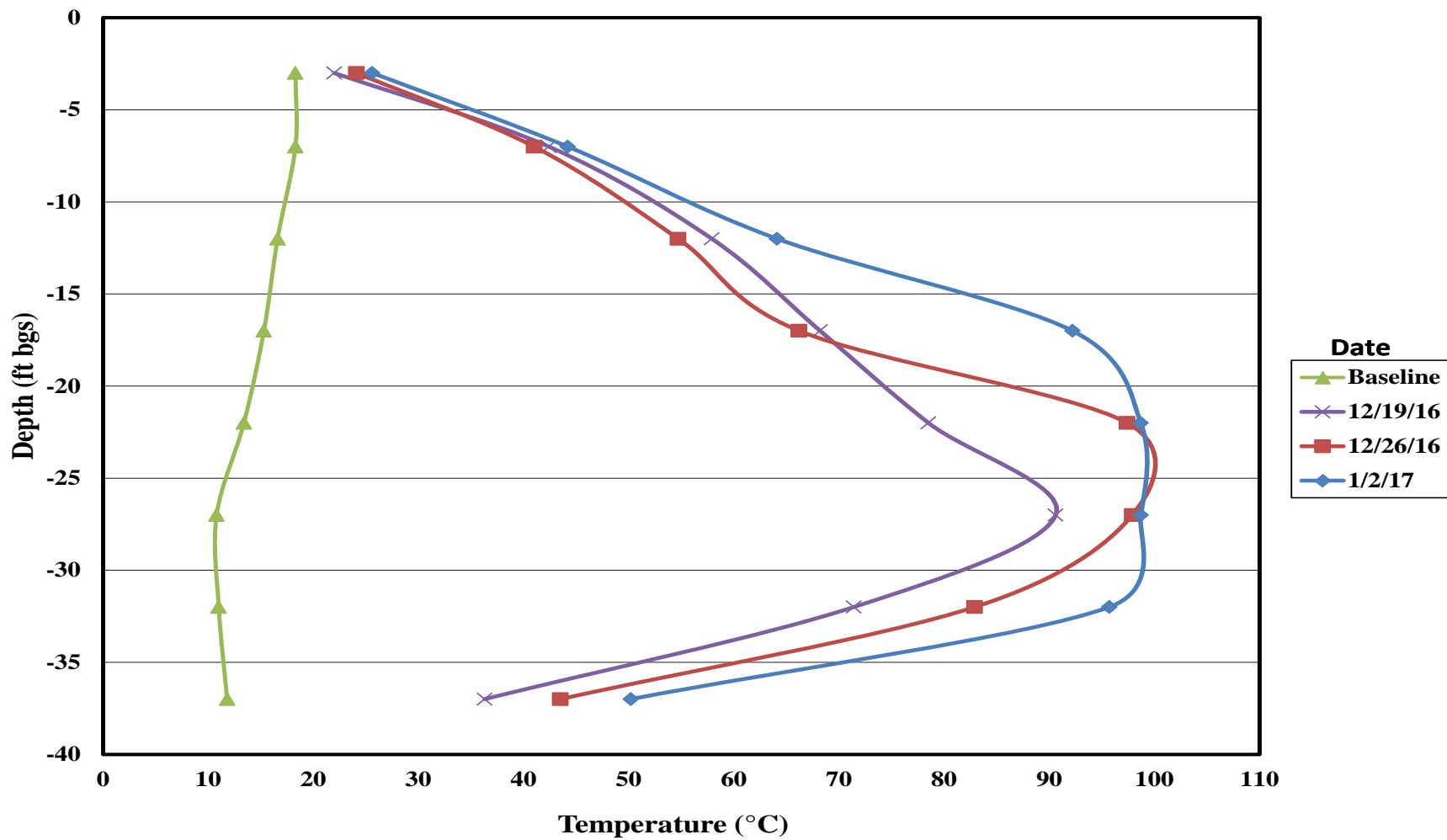


Figure 2e. TMP K5 Temperature vs. Depth



**Figure 2f.** TMP K7 Temperature vs. Depth

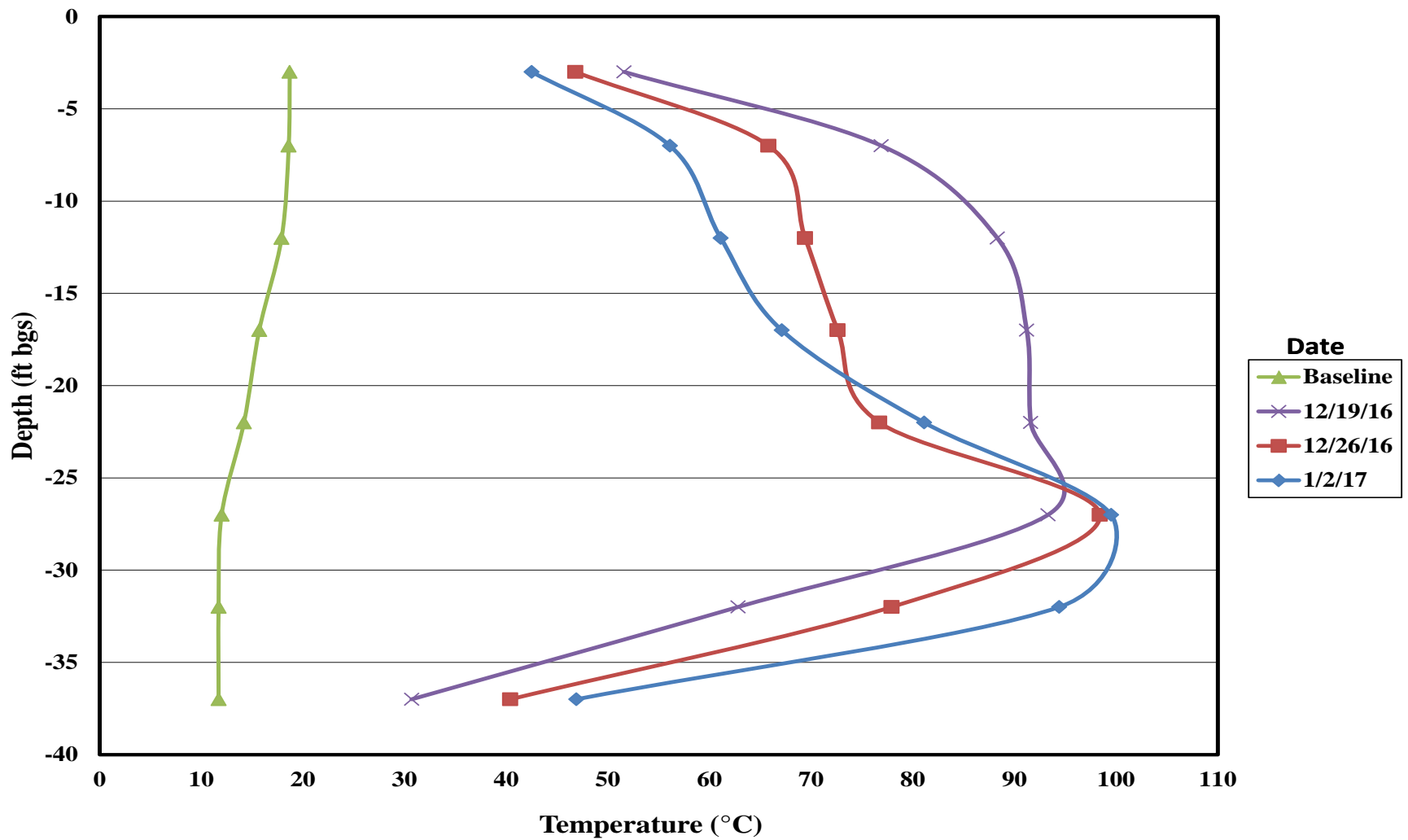
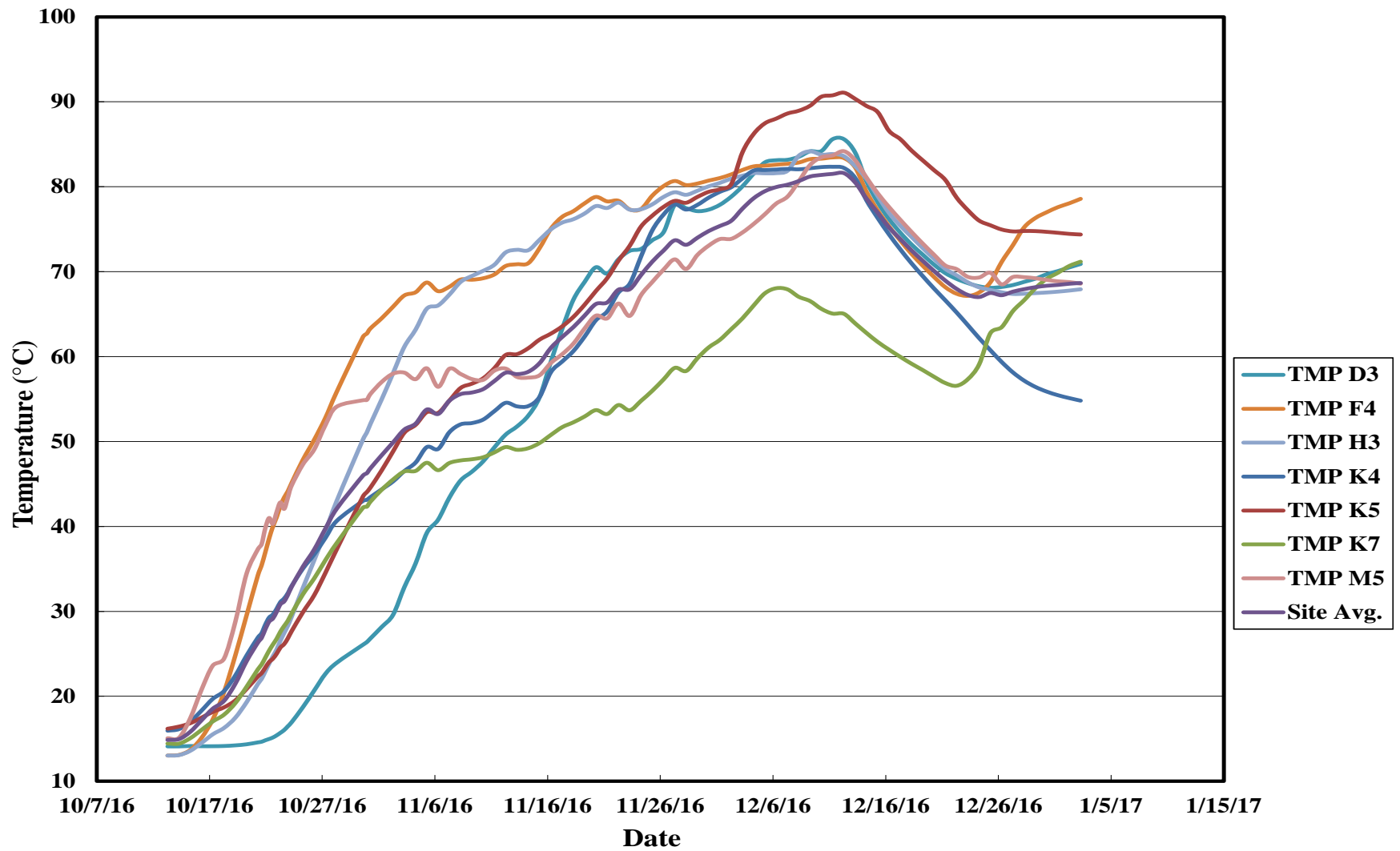
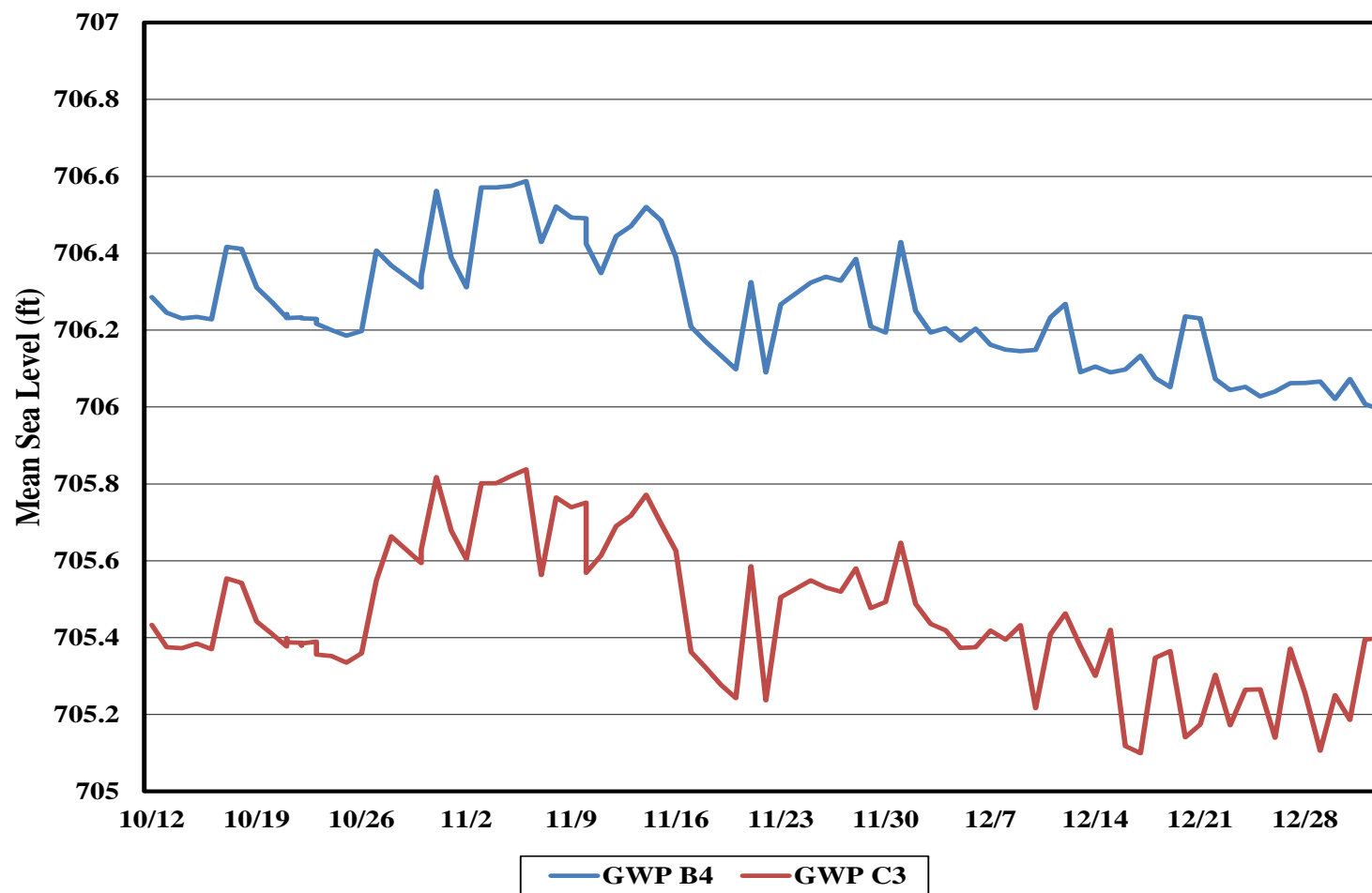


Figure 2g. TMP M5 Temperature vs. Depth

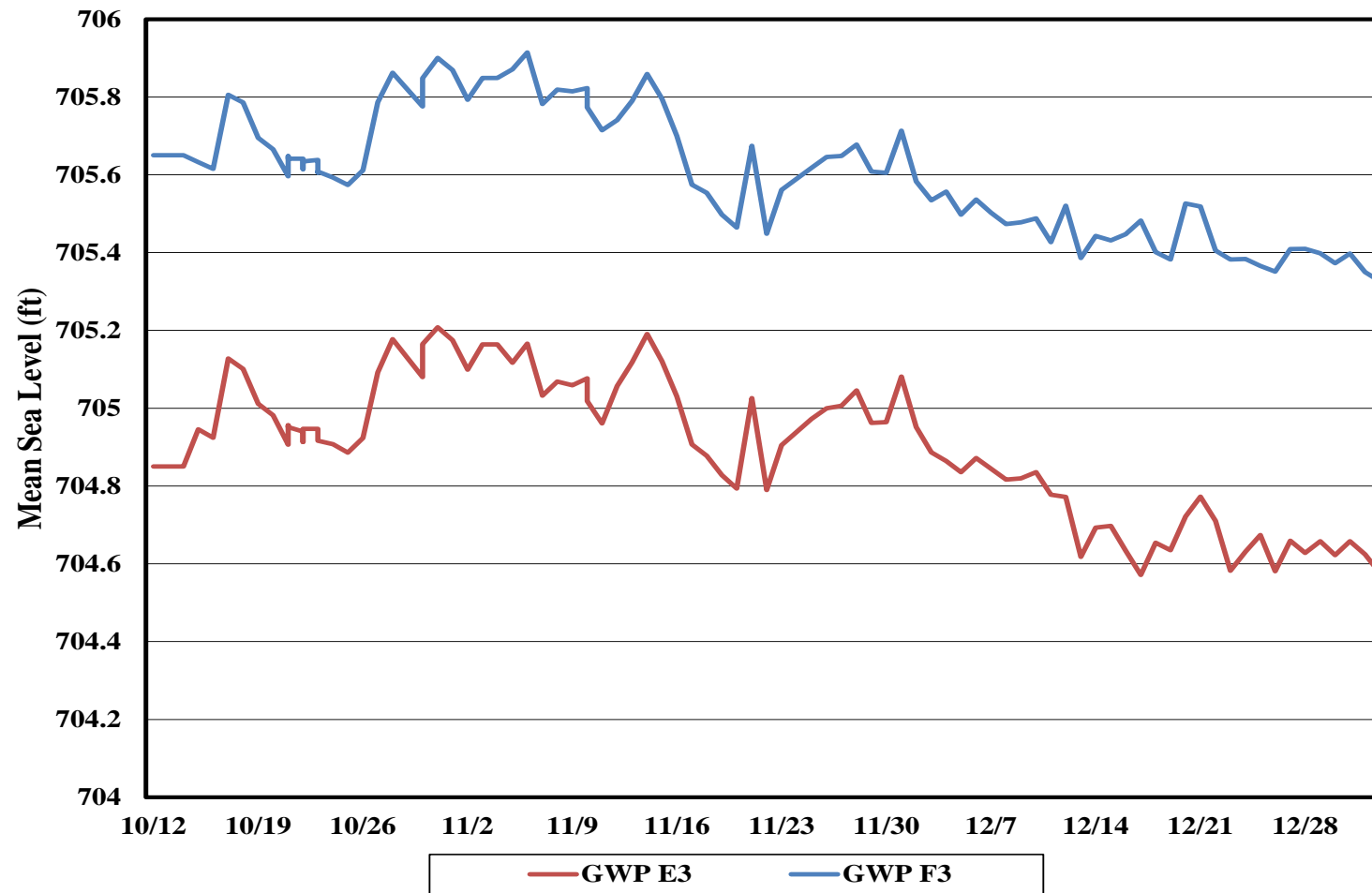




**Figure 3.** Subsurface Temperatures vs. Time



**Figure 4a.** GWP B4 and GWP C3



**Figure 4b.** GWP E3 and GWP F3

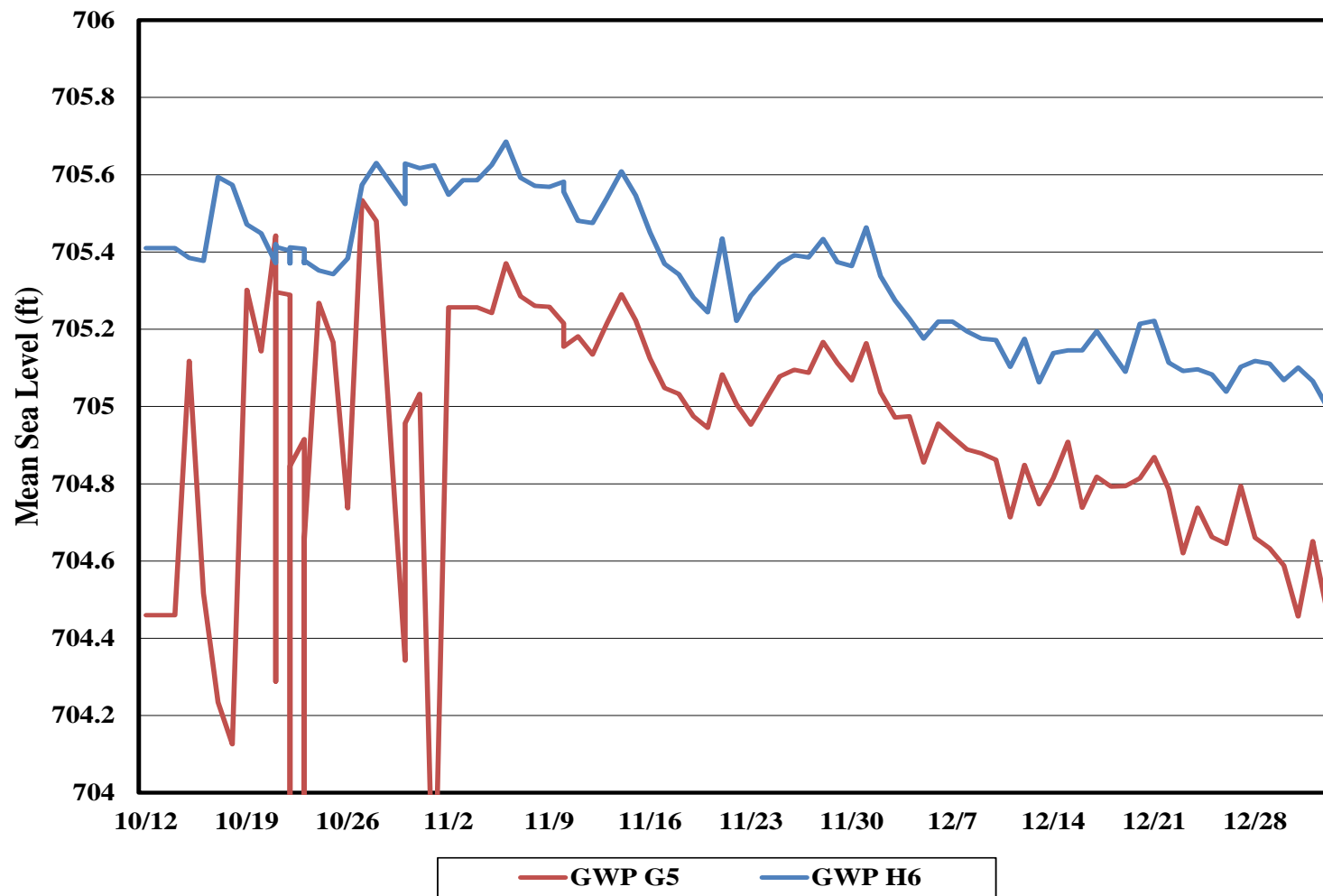
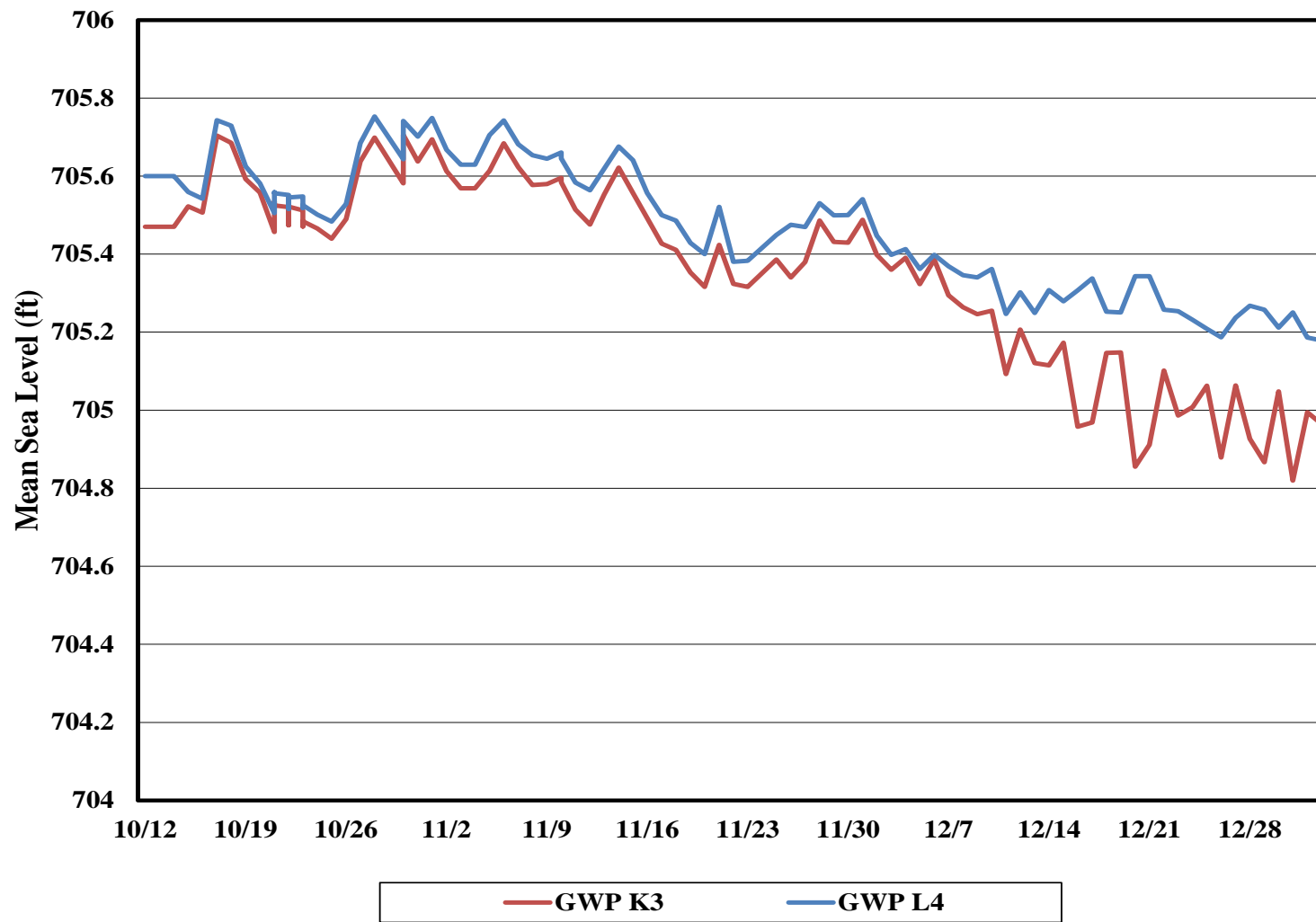
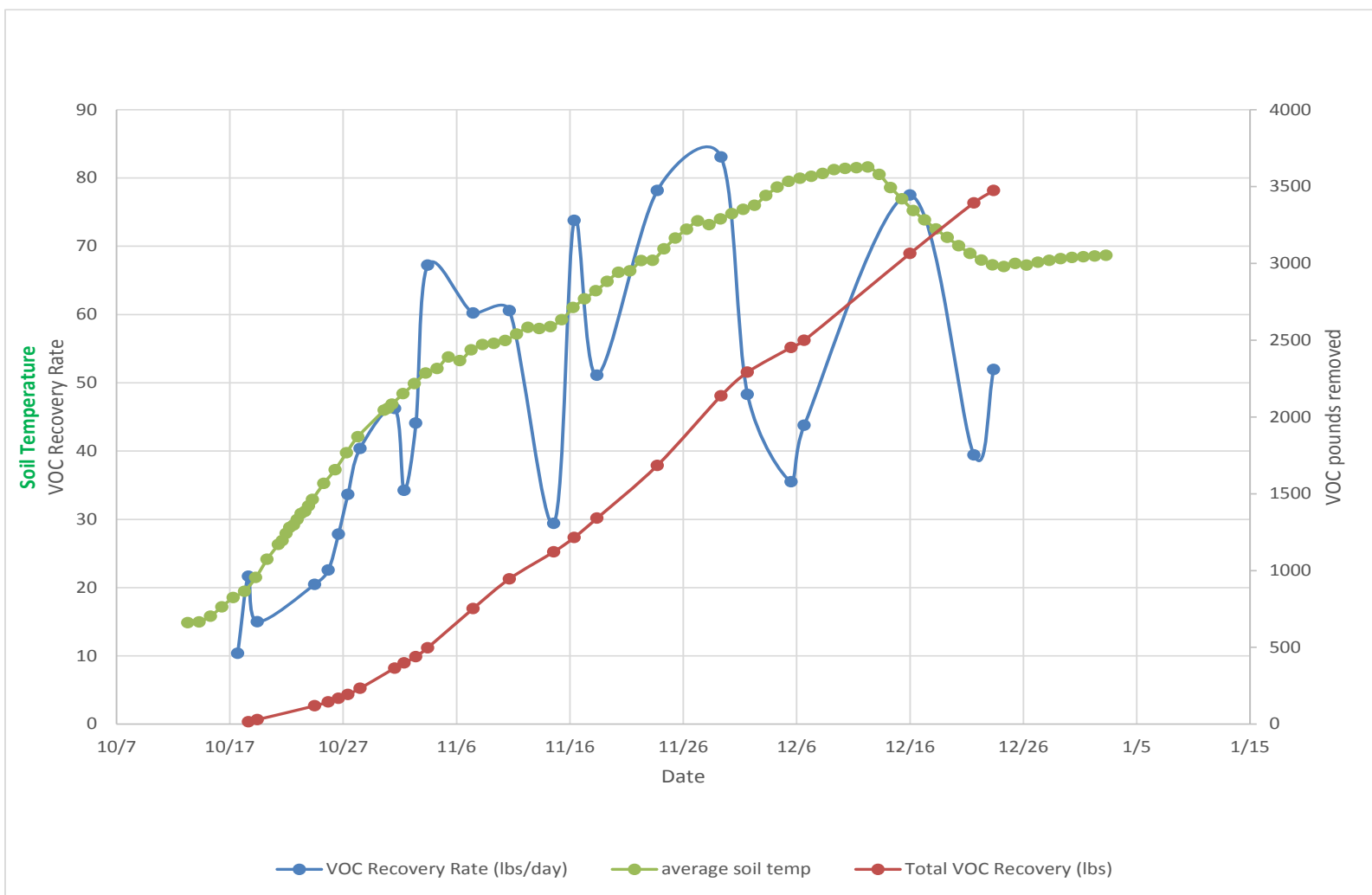


Figure 4c. GWP G5 and GWP H6





**Figure 4d.** GWP K3 and GWP L4



**Figure 5. ERH Performance**



January 31, 2017

Mr. Brian Conrath  
Remedial Project Manager  
Illinois Environmental Protection Agency  
1021 N. Grand Ave. East  
Springfield, Illinois 62702  
(217) 557-8155  
Brian.Conrath@Illinois.gov

**Subject: ERH Weekly Report**  
**January 23, 2017 to January 30, 2017**  
**Southeast Rockford Groundwater Contamination Site Area 4**  
**2630 Marshall Street, Rockford, Illinois.**

Dear Mr. Conrath,

This letter report contains a brief description of the Electrical Resistance Heating (ERH) remediation operations performed at 2630 Marshall Street, Rockford, Illinois (the Site). The time period addressed in this report is from January 23 to January 30, 2017.

### **ERH Application Summary**

The ERH system operational parameters through January 30, 2017 are presented below in **Table 1**.

**Table 1. Key ERH System Operational Parameters**

<b>ERH System Parameters</b>	<b>January 23</b>	<b>January 30</b>
Weekly Average Power (kW)	279	394
Cumulative Energy Applied (kWh)	1,124,000	1,191,300
Average Subsurface Temperature (°C)	64.5	61.1
Average Vapor System Flow Rate (scfm)	863	843
Duration of System Shutdown (approximate hours)	42	5
Discharge to GETS flow rate (gpm)	0.6	0.8
Total water discharged to GETS	81,706	89,465

The ERH system experienced three shut downs during the reporting period. The first shutdown occurred on the afternoon of Tuesday January 24, 2017 at approximately 2:00pm so that TRS could safely install and implement an air addition system designed to work in conjunction with ERH. The installation was completed at approximately 4:00pm and the system was returned to full operation.

The second shutdown occurred on the morning of Thursday January 26, 2017 at approximately 1:30am and was the result of an unauthorized intrusion alarm. TRS staff and the Rockford Police Department both responded to the alarm, but no apprehension of suspects occurred. Following a

thorough search of the building on site the ERH system was restarted at approximately 3:30am and normal operations were resumed. The third shutdown occurred on the morning of Monday January 30, 2017 at approximately 12:45am and was once again the result of an unauthorized intrusion alarm. The Rockford Police Department once again responded to the alarm, but again were unable to apprehend a suspect. TRS worked with the police to ensure the site was clear of intruders and the system was restarted remotely at approximately 1:45am.

The PCU, vapor recovery, and vapor abatement systems operated within design parameters during the reporting period.

## **Temperatures**

The highest individual temperature measurement within the treatment volume was 100.3°C. This was recorded at location SS8 at 32-feet below ground surface (ft bgs) on Tuesday January 24, 2017. The average subsurface temperature in the treatment area remained relatively constant with a slight decrease from 64.5 degrees Celsius (°C) to 61.1°C during the reporting period. It should be noted that following the implementation of the air addition system the RTD bundles that had been temporarily installed in wells SS1 and SS6 were returned to their original TMP casings. The RTD bundle located in SS1 was returned to TMP K4 and the RTD bundle located at SS6 was returned to TMP F4. These moves resulted in only one RTD bundle, located at SS8, remaining within the reduced focus area.

To illustrate the temperature change, the data is presented in seven separate graphs based on TMP location. Temperatures relative to depth for each TMP are presented in **Figures 2a** through **2g**. Average subsurface temperature over time is presented in **Figure 3**.

## **Power and Energy**

The PCU averaged 394 kilowatts (kW) of applied power to the treatment volume during the reporting period. A total of 1,191,300 kilowatt-hours (kWh) of energy have been applied to the subsurface as of January 30, 2017.

## **ERH Vapor Recovery**

During this reporting period, the average vacuum applied to the subsurface, as measured at the condenser inlet, was approximately 5.2 inches of mercury (in Hg). The vapor stream flow rate, as measured after the vapor recovery blower, averaged 843 standard cubic feet per minute (scfm).

Vapor samples are collected from the influent and effluent of the vapor-phase granular activated carbon (VGAC) system whenever TRS is onsite. Analysis is performed using a photoionization detector (PID) MiniRae 3000. In accordance with the Work Plan, vapor samples are also collected once per week during the first four weeks of operations and then bimonthly thereafter. The vapor samples were sent offsite for analysis by Method TO-15, including a listing of tentatively identified compounds, in an attempt to quantify the heavier compounds recovered by the vapor recovery system. Of note, both 1,1,1-TCA and 1,1-DCE vapor concentrations have declined dramatically, while the heavier hydrocarbon compound recovery has increased.

The available results of the PID and TO-15 analysis can be found in the attached **Table 3**, **Table 4** and **Table 5**. The PID readings and TO-15 data confirm that the VGAC system is performing as designed and operating in accordance with the substantive discharge requirements. Based on PID readings, TRS estimates that approximately 5,108 pounds of volatile organic compounds (VOCs) have been removed from the treatment volume.



## ERH Process Water

During this reporting period, the ERH system discharged 7,759 gallons to the Groundwater Extraction and Treatment System (GETS) at an average rate of 0.8 gallons per minute (gpm). To date a total of 89,465 gallons has been discharged to the GETS. The water recovered by the ERH system is passed through a particulate filter and two liquid-phase granular activated carbon (LGAC) vessels arranged in series prior to discharge to the GETS. The water recovered and treated with LGAC prior to being sent to the GETS is now being analyzed for VOCs twice per month by an offsite laboratory. The results of these analyses are provided in **Table 6**. The LGAC system has been working as designed.

## Groundwater and Vacuum Piezometers

TRS collects vacuum piezometer readings at least once a week while onsite to illustrate full vacuum influence across the Site. The readings collected to date are presented in **Table 2**.

**Table 2 Site VP Readings (inches water column)**

Date/Time	VP-B4	VP-C2	VP-D4	VP-G4	VP-K5	VP-L4	VP-L7	VP-M6
10/14/16	1.0	1.0	3.0	8.0	8.5	3.0	3.0	4.0
10/18/16	1.5	1.5	4.0	8.8	8.0	3.0	3.3	3.5
10/24/16	1.5	1.5	3.5	5.5	6.5	2.5	3.0	3.0
11/2/16	1.5	1.5	4.0	5.0	6.5	2.5	3.0	3.5
11/10/16	1.0	1.0	4.5	5.0	7.0	2.5	2.5	3.5
11/15/16	1.0	1.0	4.0	4.5	7.0	3.0	2.5	3.0
11/21/16	1.5	1.5	3.5	5.0	6.5	3.0	3.0	3.0
11/29/16	1.0	1.0	3.0	4.5	6.0	2.5	2.5	3.0
12/5/16	1.5	1.5	4.0	5.0	6.0	3.0	3.0	3.0
12/14/16	1.0	1.0	3.5	4.5	5.5	2.5	2.5	2.5
12/21/16	1.0	1.0	4.0	4.5	5.5	3.0	2.5	3.0
1/4/17	1.0	1.0	3.5	4.0	5.0	3.0	2.5	2.5
1/9/17	1.0	1.0	3.5	4.0	4.5	3.0	2.5	2.5
1/18/17	1.0	1.0	3.0	4.0	4.5	3.5	3.0	3.0
1/23/17	1.0	1.0	3.5	4.0	4.5	3.0	2.5	3.0

In addition to the vacuum piezometer readings, TRS also collects groundwater elevation measurement readings daily through automated data collection. On Thursday January 26, 2017 the device that records the groundwater elevation measurement readings reached the end of its battery life. TRS is in the process of looking into an alternative acceptable method to collect this data through the end of system operations. The groundwater elevation readings are presented graphically in **Figures 4a** through **4d**. As the readings show, there are fluctuations occurring within the piezometers, but the changes are consistent inside and outside the treatment volume showing drawdown inside, indicating hydraulic control.

The GETS operated with ground water pumping well EW1 online during this operational period, recovering about 30 gpm from the well. EW1 is located north of the treatment volume, on Marshall Street.

### **Planned Activities**

TRS personnel will visit the Site the week of January 30, 2017 to collect operations data, optimize the system, and perform weekly system maintenance.

Should you have any questions concerning this report, or if you would like any additional information, please contact either me or Chris Thomas by phone at (360) 560-7551 and (847) 376-3691, respectively.

Sincerely,  
TRS Group, Inc.



Bradley Morris  
Project Manager

Attachments: Table 3, 4, 5 - Vapor Concentrations  
Table 6 – LGAC performance  
Figure 1 – Site Plan  
Figure 2a – TMP D3 Temperature vs. Depth  
Figure 2b – TMP F4 (SS6) Temperature vs. Depth  
Figure 2c – TMP H3 Temperature vs. Depth  
Figure 2d – TMP K4 (SS1) Temperature vs. Depth  
Figure 2e – TMP K5 Temperature vs. Depth  
Figure 2f – TMP K7 (SS8) Temperature vs. Depth  
Figure 2g – TMP M5 Temperature vs. Depth  
Figure 3 – Subsurface Temperatures vs. Time  
Figure 4a – GWP B4 and C3  
Figure 4b – GWP E3 and F3  
Figure 4c – GWP G5 and H6  
Figure 4d – GWP K3 and L4  
Figure 5 – ERH Performance

cc/att: Chris Thomas, TRS  
Tim Warner, TRS

## **Attachments**

**Table 3 Vapor Influent and Effluent PID Monitoring Results**

Date	Blower Flow Rate (scfm)	Influent Conc (ppm)	Effluent Conc (ppm)	VOC Recovery Rate (lbs/day)	Total VOC Recovery (lbs)	VOC Discharge Rate (lbs/day)	Total HAPS Discharged (lbs)	Total VOC Discharged (lbs)	LAB Total VOC Recovery Rate (lbs/day)
10/17/16	830	25.6	0.0	10.4	0.0	0.0	0.0	0.0	
10/18/16	830	53.4	0.0	21.7	15.0	0.0	0.0	0.0	8.1
10/19/16	830	37.0	0.0	15.0	29.7	0.0	0.0	0.0	
10/24/16	834	50.2	0.0	20.5	119	0.0	0.0	0.0	
10/25/16	837	55.2	0.0	22.6	145	0.0	0.0	0.0	46.5
10/26/16	839	67.9	0.0	27.8	168	0.0	0.0	0.0	
10/27/16	850	81.0	0.0	33.6	193	0.0	0.0	0.0	
10/28/16	861	96.0	1.0	40.4	233	0.4	0.0	0.2	
10/31/16	860	110.0	3.0	46.2	365	1.3	0.2	2.8	
11/1/16	845	83.0	8.0	34.3	399	3.3	0.3	4.7	56.0
11/2/16	859	105.0	7.0	44.1	440	2.9	0.6	7.9	
11/3/16	860	160.0	15.0	67.2	497	6.3	0.9	12.8	
11/7/16	860	143.3	52.3	60.2	752	22.0	4.9	69.3	61.9
11/10/16	869	142.7	45.1	60.6	946	19.1	9.5	135	
11/14/16	860	70.0	53.0	29.4	1,122	22.3	15.1	216	
11/16/16	878	172.0	92.0	73.8	1,215	39.5	19.0	272	
11/18/16	824	127.0	82.0	51.1	1,341	33.0	24.1	345	
11/23/16	800	200.0	0.0	78.2	1,684	0.0	30.3	433	240.4
11/29/16	802	212.0	156.0	83.1	2,138	61.1	42.3	604	
12/1/16	719	138.0	122.0	48.3	2,291	42.8	50.1	726	
12/5/16	708	102.7	136.5	35.5	2,452	47.2	62.9	899	
12/6/16	711	126.1	123.0	43.8	2,498	42.7	66.6	951	50.9



Date	Blower Flow Rate (scfm)	Influent Conc (ppm)	Effluent Conc (ppm)	VOC Recovery Rate (lbs/day)	Total VOC Recovery (lbs)	VOC Discharge Rate (lbs/day)	Total HAPS Discharged (lbs)	Total VOC Discharged (lbs)	LAB Total VOC Recovery Rate (lbs/day)
12/16/16	770	206.0	202.0	77.5	3,064	76.0	105.3	1,505	
12/21/16	776	104	101	39.4	3,393	38.3	105.3	1,505	8.1
12/23/16	886	120	117	51.9	3,473	50.6	105.3	1,505	
1/3/17	871	111.0	132.0	47.2	4,032	56.2	175.4	2,506	17.8
1/9/17	879	124.9	100.0	53.7	4,331	43.0	196.0	2,800	
1/10/17	271	135.0	110.0	17.9	4,368	14.6	198.1	2,830	
1/11/17	762	71.6	65.0	26.7	4,388	24.2	199.3	2,847	
1/17/17	857	40.1	50.0	16.8	4,520	20.9	212.6	2,984	
1/23/17	848	173.4	100.0	71.8	4,784	41.4	227.4	3,249	
1/25/17	853	300.0	250.0	124.9	4,966	104.1	236.9	3,384	
1/26/17	859	268.7	180.0	112.7	5,108	75.5	244.3	3,490	

**Table 4 TO 15 Influent to VGAC**

<b>Date</b>	<b>1,1,1 TCA (ug/m3)</b>	<b>1,1 DCE (ug/m3)</b>	<b>1,1 DCA (ug/m3)</b>	<b>Other TO-15 (ug/m3)</b>	<b>Other as Decane (ug/m3)</b>	<b>Total VOCs (ug/m3)</b>	<b>Total VOC Recovery Rate (lbs/day)</b>
10/18/16	100,000	280	3,400	5,450	NS	109,130	8
10/25/16	50,000	7,200	1,700	6,900	469,690	620,095	47
11/1/16	53,000	29,000	430	23,670	633,670	739,770	56
11/7/16	13,000	16,000	2,800	21,625	749,022	802,447	62
11/23/16	1,800	1,800	590	121,860	5,330,521	5,456,571	391
12/6/16	540	2,000	210	20,610	774,873	798,233	51
12/22/16	200	150	18	9,396	106,610	116,374	8
1/3/17	230	170	33	6,474	220,836	227,743	18

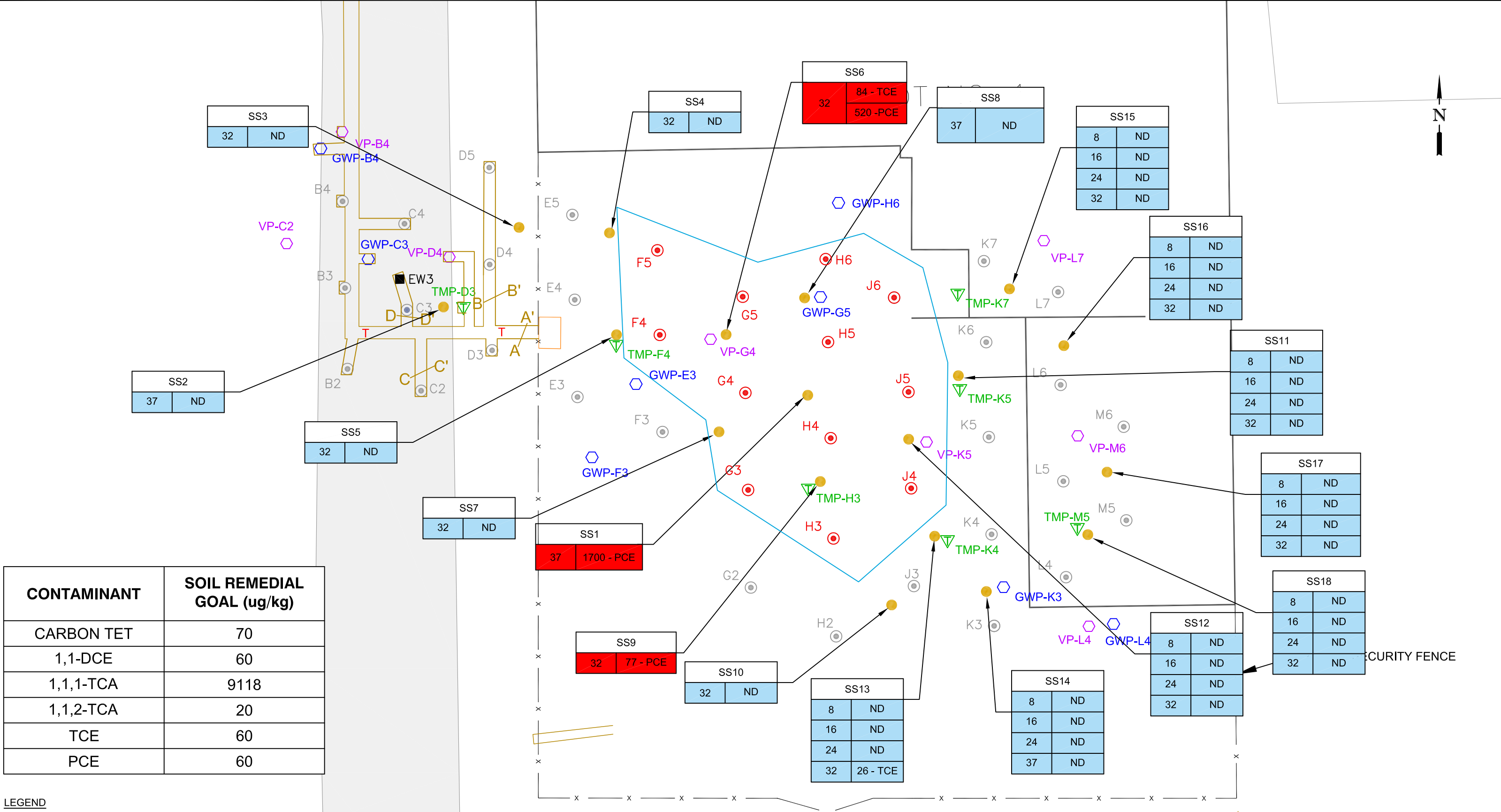
**Table 5 TO 15 Effluent from VGAC**

<b>Date</b>	<b>1,1,1 TCA Conc. (ug/m3)</b>	<b>1,1 DCE Conc. (ug/m3)</b>	<b>1,1 DCA Conc. (ug/m3)</b>	<b>Other TO-15 (ug/m3)</b>	<b>Other as Decane (ug/m3)</b>	<b>Total VOCs (ug/m3)</b>	<b>Total HAPS Discharge Rate (lb/day)</b>	<b>Total VOC Discharge Rate (lb/day)</b>
10/18/16	47	ND	ND	410	NS	457	0.03	0
10/25/16	5,200	110	430	17	NS	5,757	0.43	0
11/1/16	72,000	8,300	ND	ND	NS	80,300	6.08	6
11/7/16	100,000	15,000	5,800	1,370	NS	122,170	9.42	9
11/23/16	79	48	15	233	20,532	20,907	0.03	2
12/6/16	1,200	3,200	120	6,600	860,440	871,561	0.71	56
12/22/16	300	230	34	11,476	233,921	245,961	0.84	17
1/3/17	250	220	36	5,812	389,064	395,382	0.49	31

**Table 6 LGAC and GETS discharge data**

	10/18/16	10/25/16	11/1/16	11/7/16	11/23/16	12/6/16	12/22/16	1/3/17
Temperature (F)	75	80	85	84	85	57	--	50
pH	8.1	8.0	8.6	9	8.1	9.0	--	8.2
Pre LGAC Carbon Tetrachloride	ND	ND	ND	ND	ND	ND	ND	ND
Pre LGAC DCE	ND	8.4	17	15.0	ND	ND	ND	ND
Pre LGAC 1,1,1 - TCA	47	110	69	24	2.6	ND	ND	ND
Pre LGAC 1,1,2 - TCA	0	1.5	2	2	ND	ND	ND	ND
Pre LGAC TCE	ND	1.1	1	0,72	ND	ND	ND	ND
Pre LGAC PCE	ND	ND	ND	1	ND	ND	ND	ND
Pre LGAC Total Contaminants Concentration	248	457	300	1,014	4,446	1,718	6,282	2614.1
Mid LGAC Carbon Tetrachloride	ND	ND	ND	LGAC off	ND	ND	ND	ND
Mid LGAC DCE	ND	ND	ND		ND	ND	ND	ND
Mid LGAC 1,1,1 - TCA	ND	ND	ND		2.5	1.2	ND	ND
Mid LGAC 1,1,2 - TCA	ND	ND	ND		ND	ND	ND	ND
Mid LGAC TCE	ND	ND	ND		ND	ND	ND	3.4
Mid LGAC PCE	ND	ND	ND		ND	ND	ND	ND
Mid LGAC Total Contaminants Concentration	191	193	0		1,503	932	5,368	2621.4
Post LGAC Carbon Tetrachloride	ND	ND	ND	LGAC off	ND	ND	ND	ND
Post LGAC DCE	ND	ND	ND		ND	ND	ND	ND
Post LGAC 1,1,1 - TCA	ND	ND	ND		ND	ND	ND	ND
Post LGAC 1,1,2 - TCA	ND	ND	ND		ND	ND	ND	ND
Post LGAC TCE	ND	ND	ND		ND	ND	ND	8.6
Post LGAC PCE	ND	ND	ND		ND	ND	ND	ND
Post LGAC Total Contaminants Concentration	249.0	214.9	24		228	485	3,683	1974.5





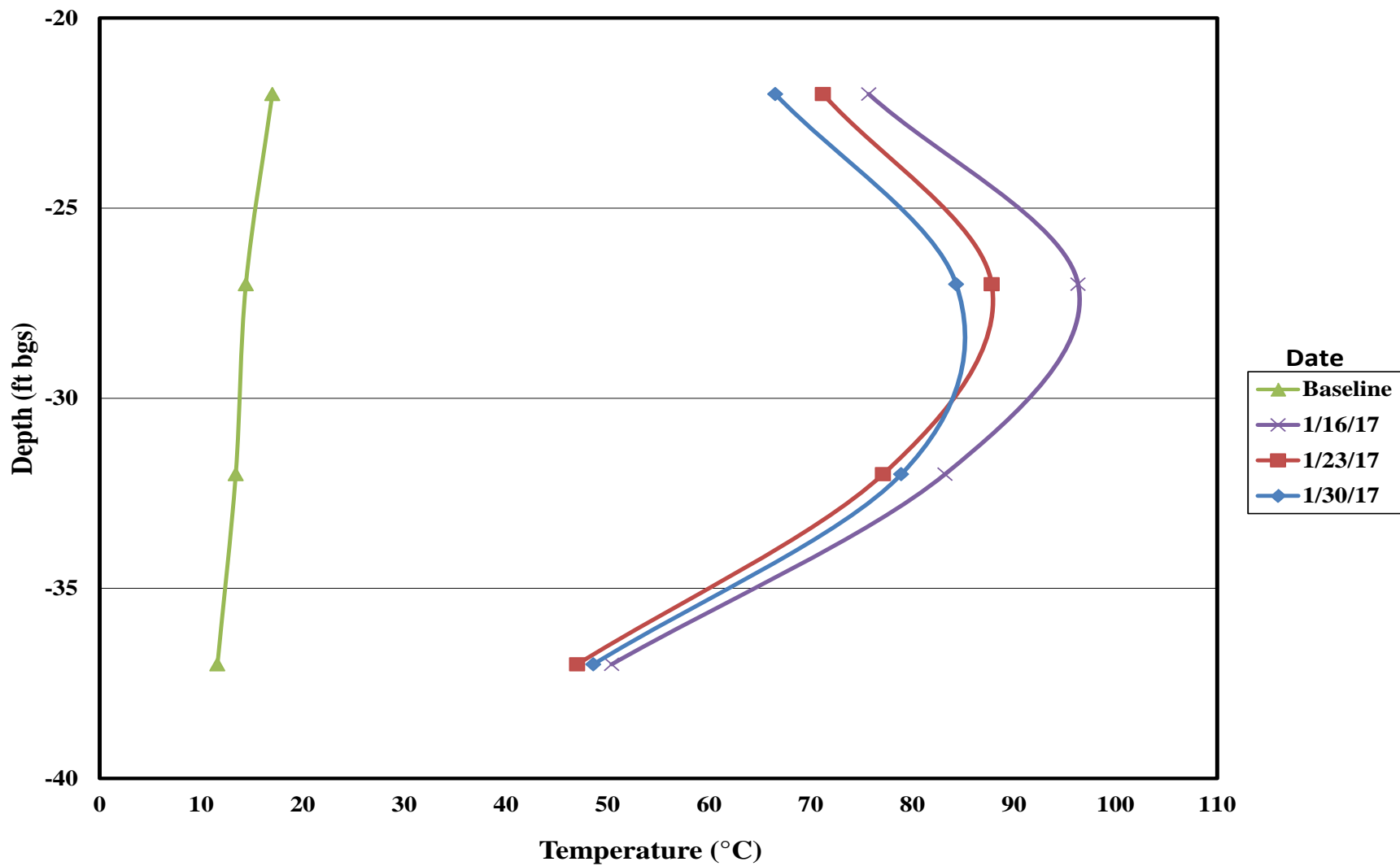
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06/15/16  
ENGINEER SIGNATURE / DATE

**TRS**  
Accelerating Value

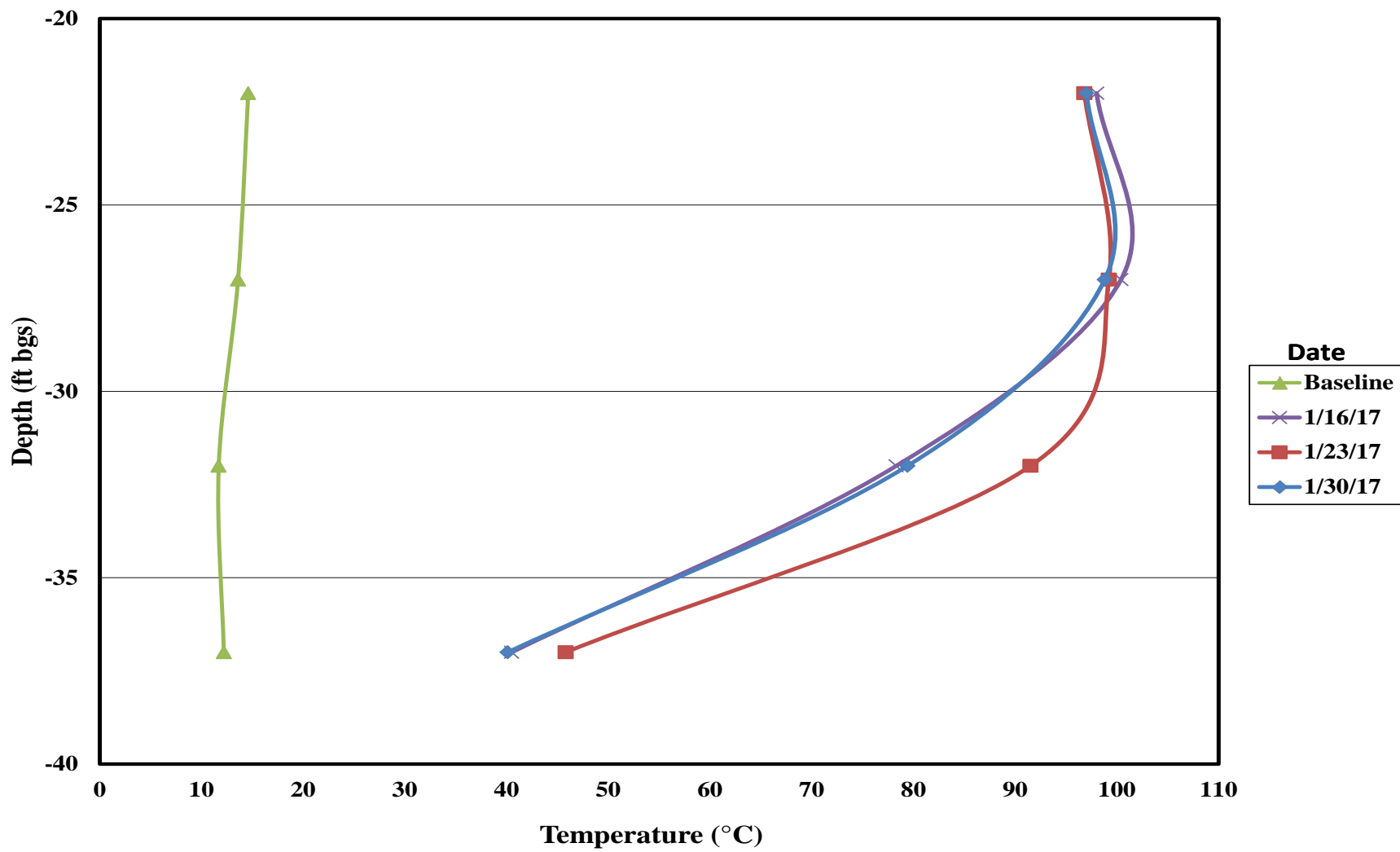
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DESIGNED BY C. LANSING	SITE LOCATION SOUTHEAST ROCKFORD AREA 4 ROCKFORD, ILLINOIS		
DRAWN BY A. WAGNER	CLIENT IL, EPA		
CHECKED BY D. OBERLE	FIGURE 1		
PROJECT MANAGER B. MORRIS	APPROVED FOR CONSTRUCTION BY <u>Daniel Oberle</u>	DATE 01/22/17	PROJECT RFD75
QSAT REVIEW 06/06/16	DATE 06/15/16	SHEET	



**Figure 2a.** TMP D3 Temperature vs. Depth



**Figure 2b.** TMP F4 Temperature vs. Depth

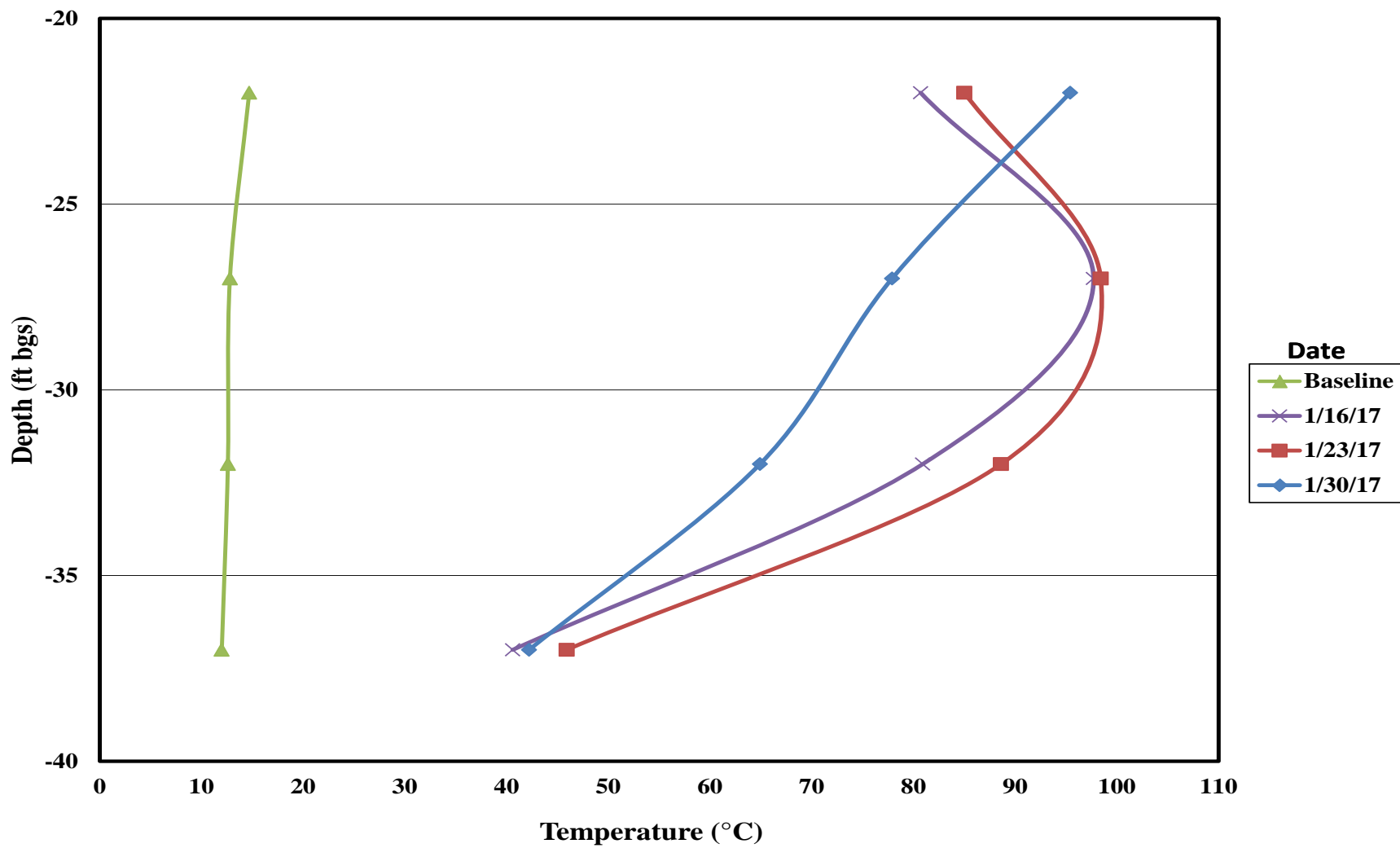
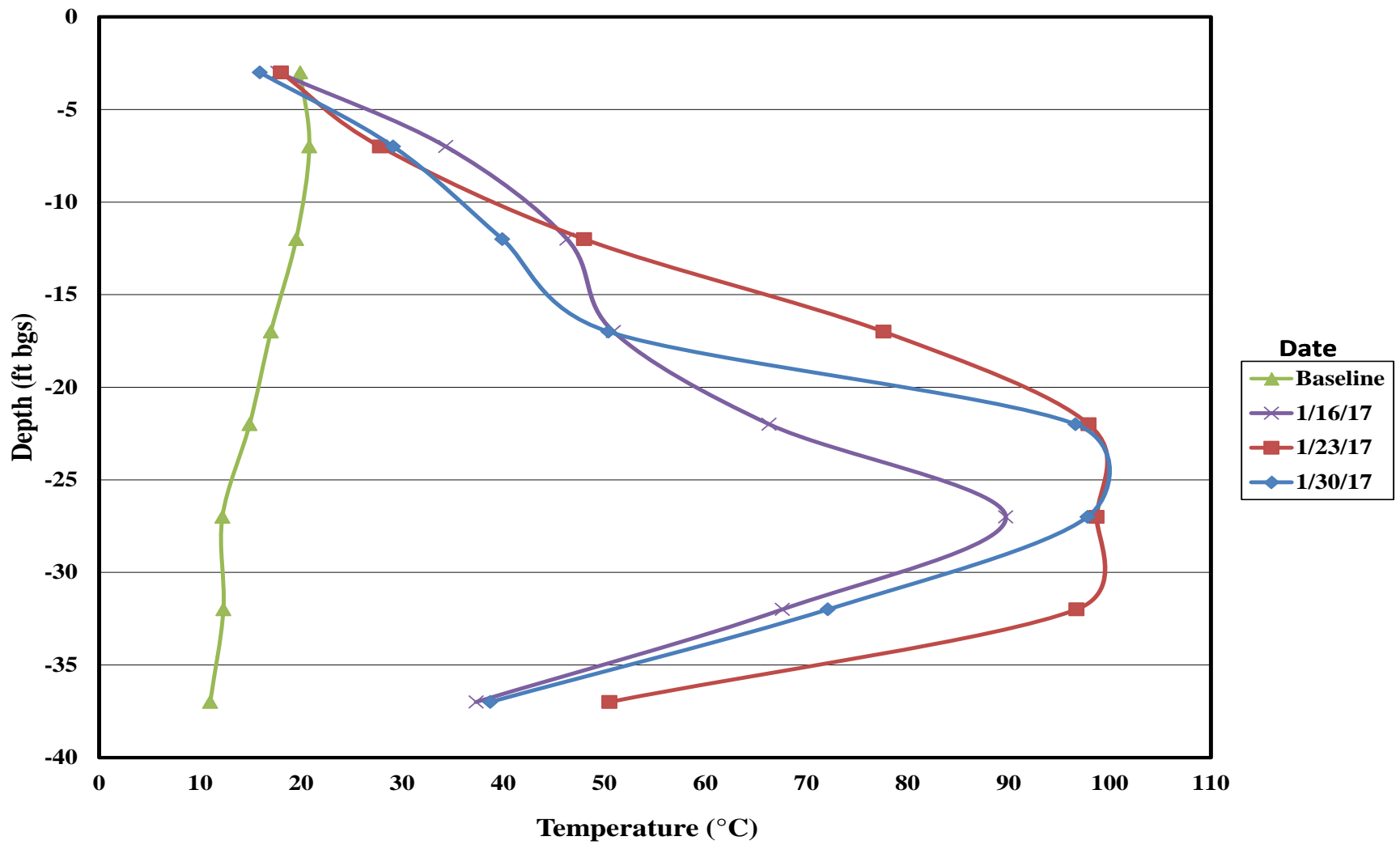


Figure 2c. TMP H3 Temperature vs. Depth





**Figure 2d.** TMP K4 Temperature vs. Depth

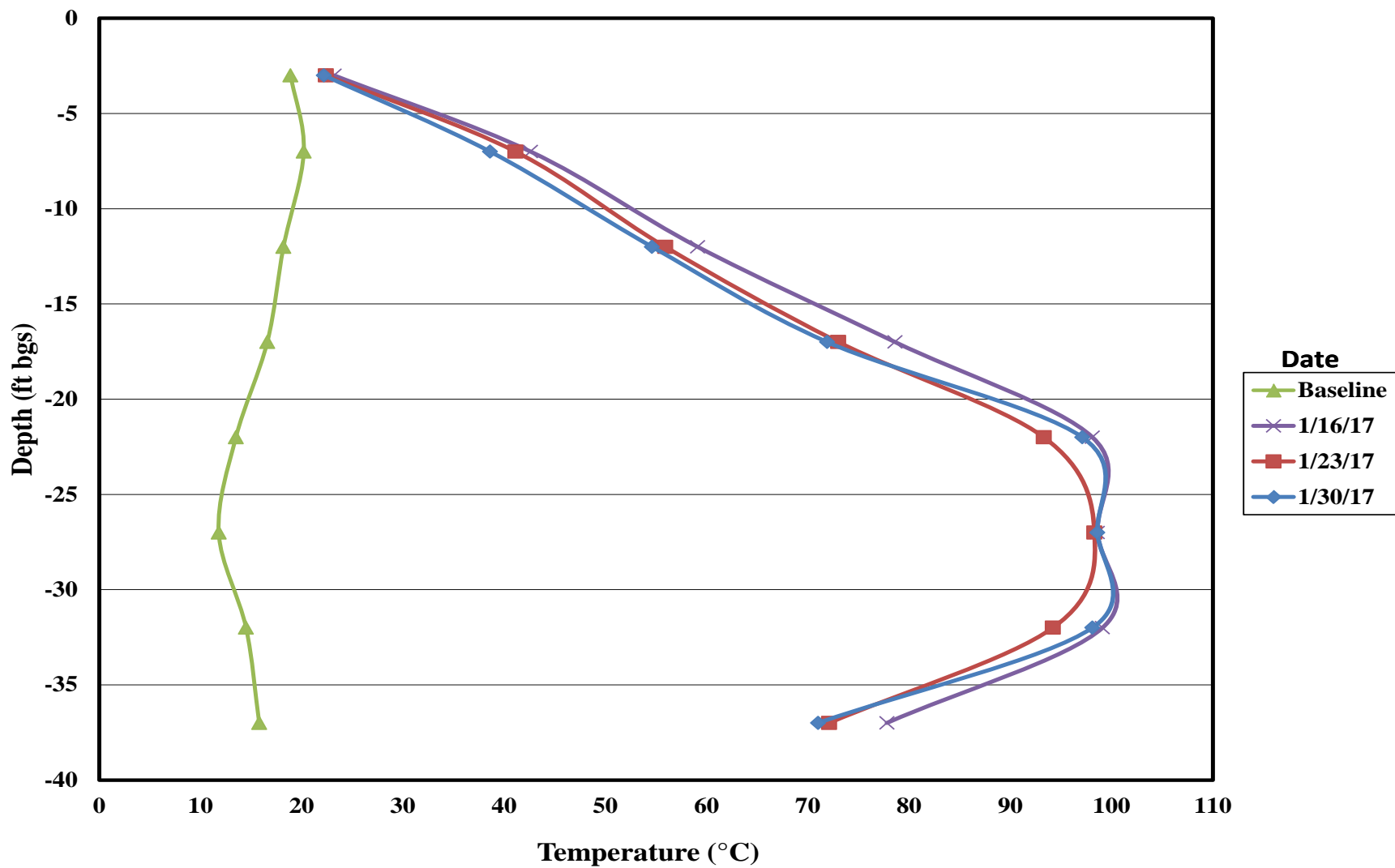


Figure 2e. TMP K5 Temperature vs. Depth

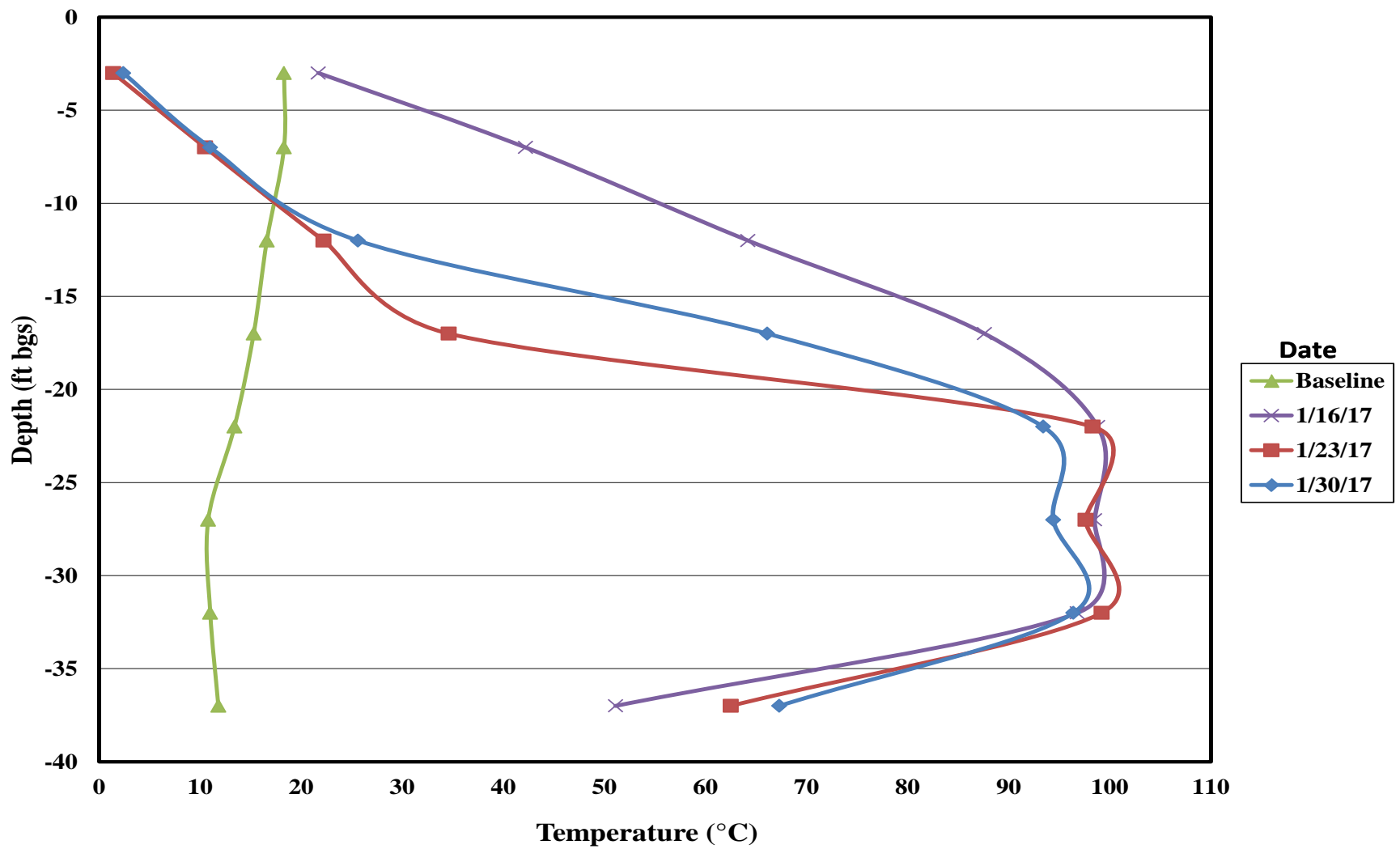


Figure 2f. Tmp K7 (SS8) Temperature vs. Depth

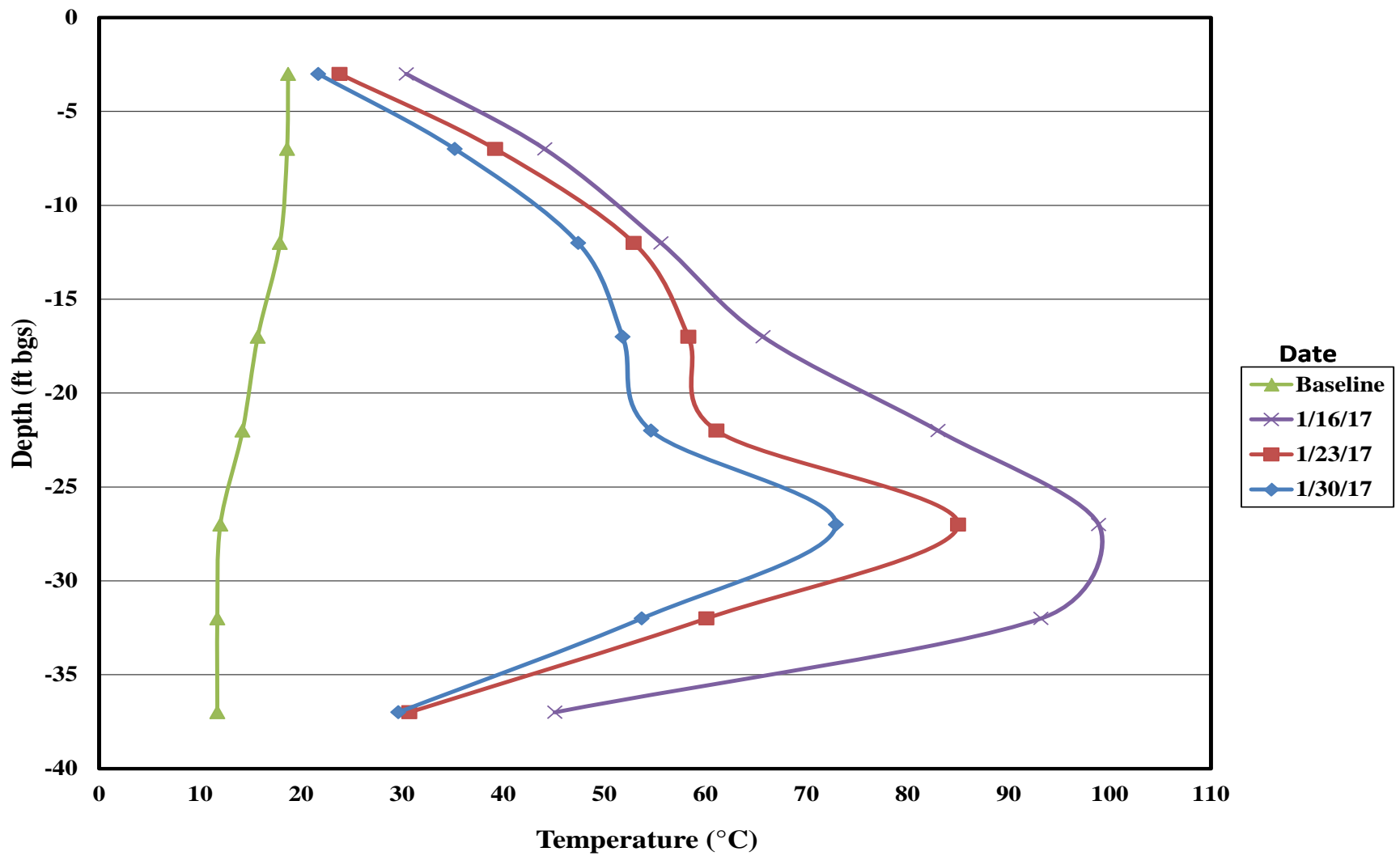
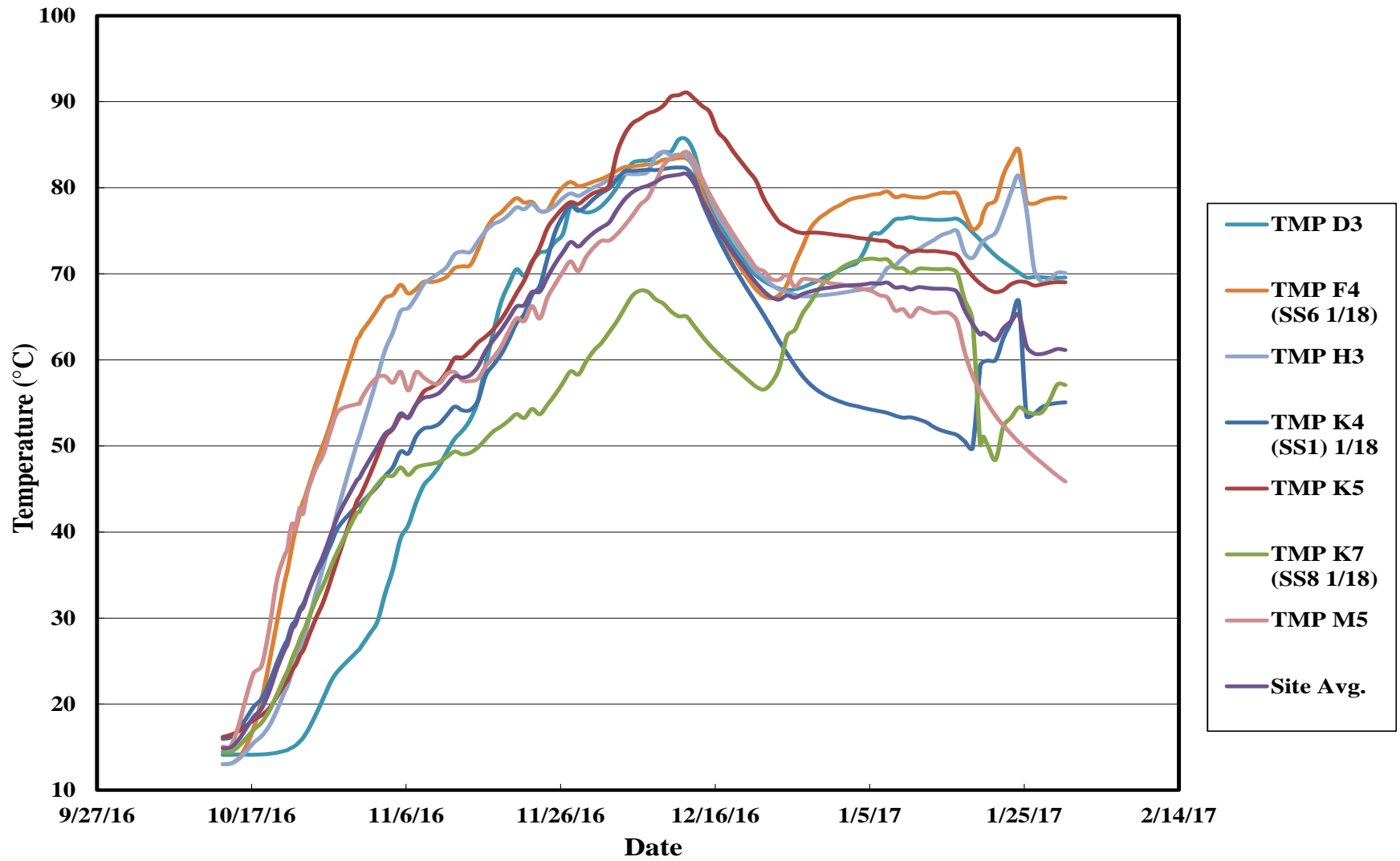


Figure 2g. TMP M5 Temperature vs. Depth





**Figure 3.** Subsurface Temperatures vs. Time

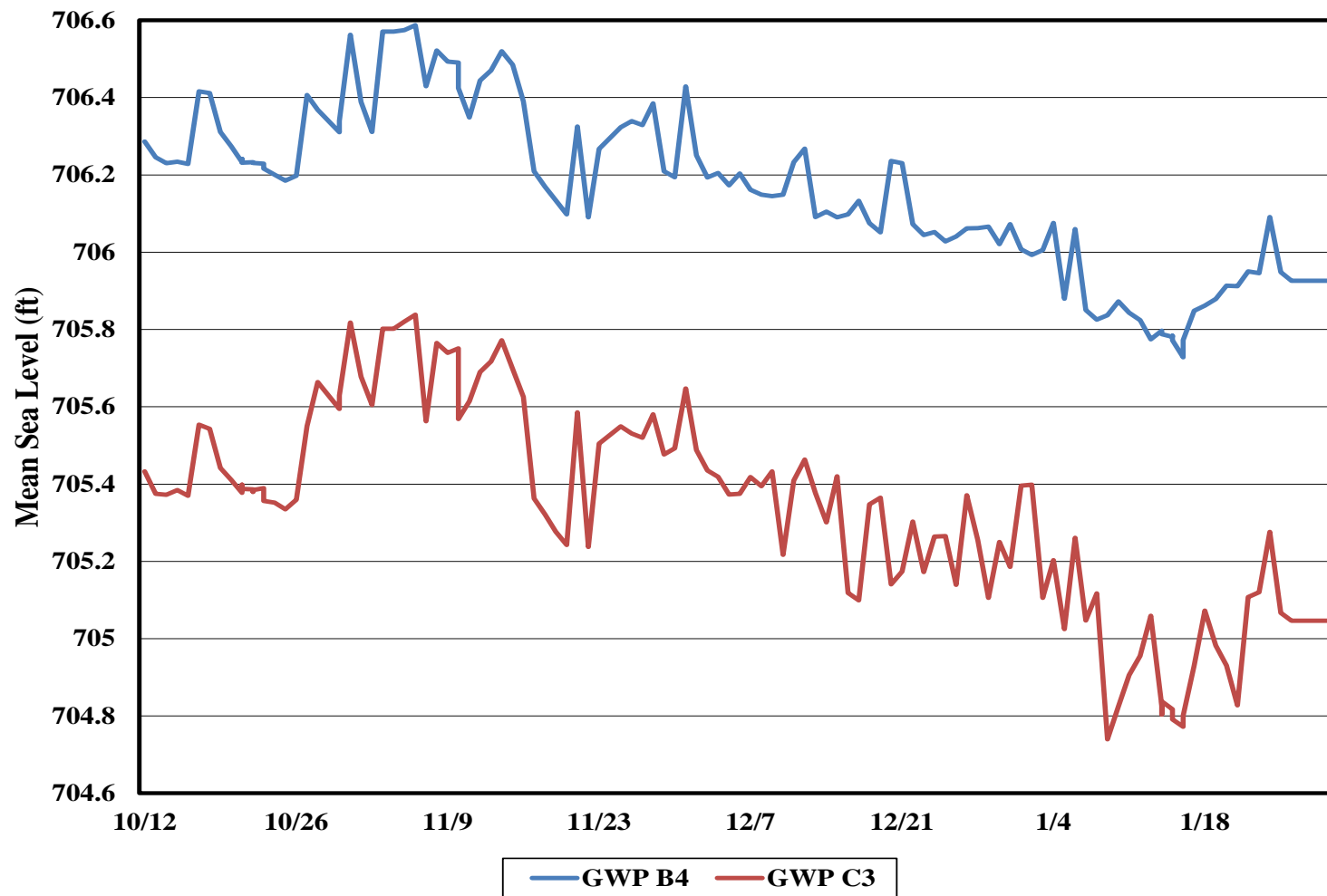


Figure 4a. GWP B4 and GWP C3

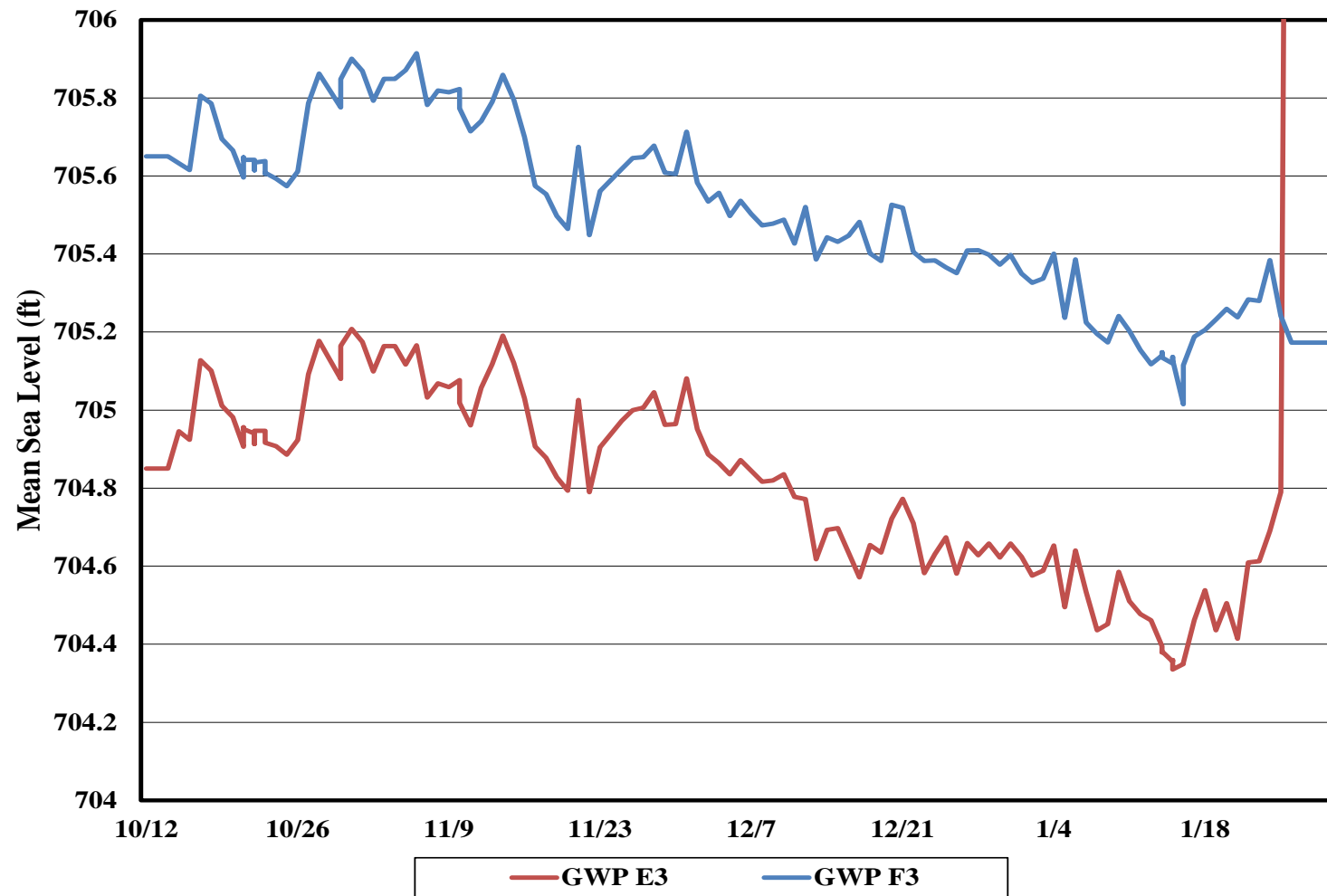


Figure 4b. GWP E3 and GWP F3

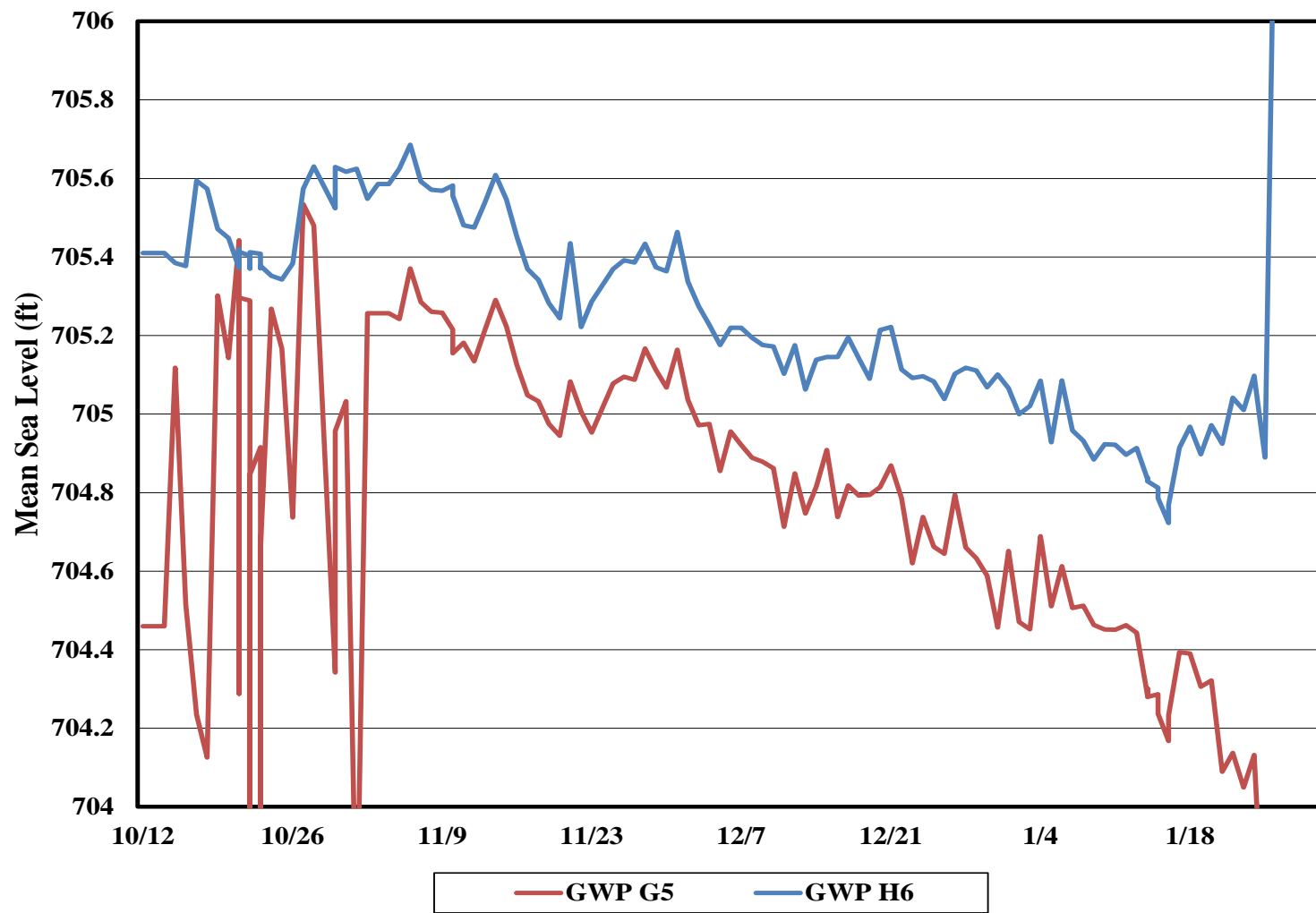
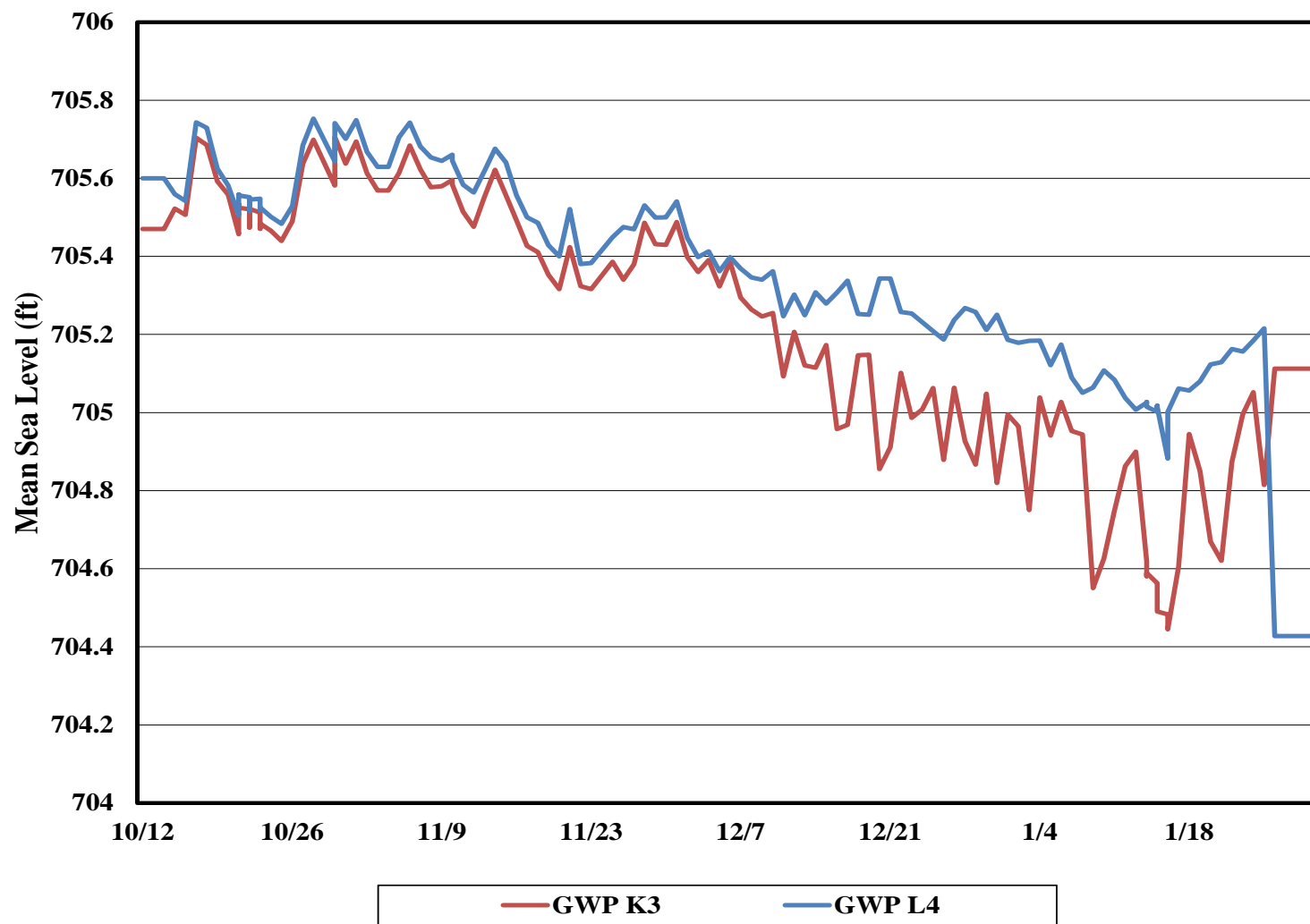
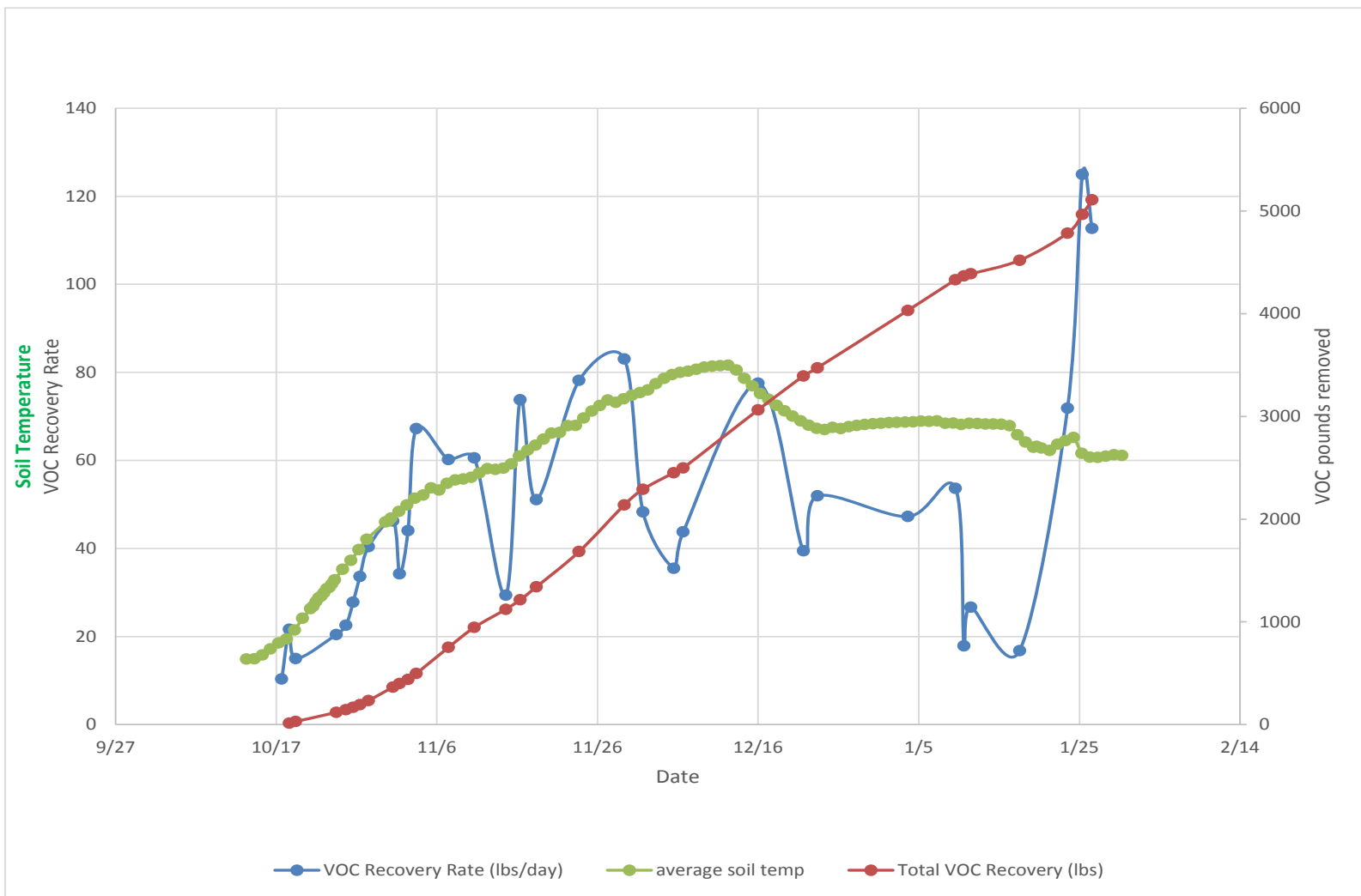


Figure 4c. GWP G5 and GWP H6





**Figure 4d.** GWP K3 and GWP L4



**Figure 5. ERH Performance**



February 7, 2017

Mr. Brian Conrath  
Remedial Project Manager  
Illinois Environmental Protection Agency  
1021 N. Grand Ave. East  
Springfield, Illinois 62702  
(217) 557-8155  
Brian.Conrath@Illinois.gov

**Subject: ERH Weekly Report**  
**January 30, 2017 to February 6, 2017**  
**Southeast Rockford Groundwater Contamination Site Area 4**  
**2630 Marshall Street, Rockford, Illinois.**

Dear Mr. Conrath,

This letter report contains a brief description of the Electrical Resistance Heating (ERH) remediation operations performed at 2630 Marshall Street, Rockford, Illinois (the Site). The time period addressed in this report is from January 30 to February 6, 2017.

### **ERH Application Summary**

The ERH system operational parameters through February 6, 2017 are presented below in **Table 1**.

**Table 1. Key ERH System Operational Parameters**

<b>ERH System Parameters</b>	<b>January 30</b>	<b>February 6</b>
Weekly Average Power (kW)	394	408
Cumulative Energy Applied (kWh)	1,191,300	1,260,500
Average Subsurface Temperature (°C)	61.1	61.2
Average Vapor System Flow Rate (scfm)	843	816
Duration of System Shutdown (approximate hours)	5	0
Discharge to GETS flow rate (gpm)	0.8	0.9
Total water discharged to GETS	89,465	98,320

The ERH system did not experience any shut downs and the PCU, vapor recovery, and vapor abatement systems operated within design parameters during the reporting period.

### **Temperatures**

The highest individual temperature measurement within the treatment volume was 99°C. This was recorded at TMP K5 at 27-feet below ground surface (ft bgs) on Friday February 3, 2017.

The average subsurface temperature in the treatment area remained relatively constant with a slight increase from 61.1 degrees Celsius (°C) to 61.2°C during the reporting period. As mentioned in the previous report, following the implementation of the air addition system, the RTD bundles that had been temporarily installed in wells SS1 and SS6 were returned to their original TMP casings resulting in only one RTD bundle, located at SS8, remaining within the reduced focus area.

To illustrate the temperature change, the data is presented in seven separate graphs based on TMP location. Temperatures relative to depth for each TMP are presented in **Figures 2a** through **2g**. Average subsurface temperature over time is presented in **Figure 3**.

### **Power and Energy**

The PCU averaged 408 kilowatts (kW) of applied power to the treatment volume during the reporting period. A total of 1,260,500 kilowatt-hours (kWh) of energy have been applied to the subsurface as of February 6, 2017.

### **ERH Vapor Recovery**

During this reporting period, the average vacuum applied to the subsurface, as measured at the condenser inlet, was approximately 6.0 inches of mercury (in Hg). The vapor stream flow rate, as measured after the vapor recovery blower, averaged 816 standard cubic feet per minute (scfm).

Vapor samples are collected from the influent and effluent of the vapor-phase granular activated carbon (VGAC) system whenever TRS is onsite. Analysis is performed using a photoionization detector (PID) MiniRae 3000. In accordance with the Work Plan, vapor samples are also collected once per week during the first four weeks of operations and then bimonthly thereafter. The vapor samples were sent offsite for analysis by Method TO-15, including a listing of tentatively identified compounds, in an attempt to quantify the heavier compounds recovered by the vapor recovery system. Of note, both 1,1,1-TCA and 1,1-DCE vapor concentrations have declined dramatically, while the heavier hydrocarbon compound recovery has increased.

The available results of the PID and TO-15 analysis can be found in the attached **Table 3**, **Table 4** and **Table 5**. The PID readings and TO-15 data confirm that the VGAC system is performing as designed and operating in accordance with the substantive discharge requirements. Based on PID readings, TRS estimates that approximately 5,650 pounds of volatile organic compounds (VOCs) have been removed from the treatment volume.

### **ERH Process Water**

During this reporting period, the ERH system discharged 8,855 gallons to the Groundwater Extraction and Treatment System (GETS) at an average rate of 0.9 gallons per minute (gpm). To date a total of 98,320 gallons has been discharged to the GETS. The water recovered by the ERH system is passed through a particulate filter and two liquid-phase granular activated carbon (LGAC) vessels arranged in series prior to discharge to the GETS. The water recovered and treated with LGAC prior to being sent to the GETS is now being analyzed for VOCs twice per month by an offsite laboratory. The results of these analyses are provided in **Table 6**. The LGAC system has been working as designed.

### **Groundwater and Vacuum Piezometers**

TRS collects vacuum piezometer readings at least once a week while onsite to illustrate full vacuum influence across the Site. The readings collected to date are presented in **Table 2**.



**Table 2 Site VP Readings (inches water column)**

<b>Date/Time</b>	<b>VP-B4</b>	<b>VP-C2</b>	<b>VP-D4</b>	<b>VP-G4</b>	<b>VP-K5</b>	<b>VP-L4</b>	<b>VP-L7</b>	<b>VP-M6</b>
10/14/16	1.0	1.0	3.0	8.0	8.5	3.0	3.0	4.0
10/18/16	1.5	1.5	4.0	8.8	8.0	3.0	3.3	3.5
10/24/16	1.5	1.5	3.5	5.5	6.5	2.5	3.0	3.0
11/2/16	1.5	1.5	4.0	5.0	6.5	2.5	3.0	3.5
11/10/16	1.0	1.0	4.5	5.0	7.0	2.5	2.5	3.5
11/15/16	1.0	1.0	4.0	4.5	7.0	3.0	2.5	3.0
11/21/16	1.5	1.5	3.5	5.0	6.5	3.0	3.0	3.0
11/29/16	1.0	1.0	3.0	4.5	6.0	2.5	2.5	3.0
12/5/16	1.5	1.5	4.0	5.0	6.0	3.0	3.0	3.0
12/14/16	1.0	1.0	3.5	4.5	5.5	2.5	2.5	2.5
12/21/16	1.0	1.0	4.0	4.5	5.5	3.0	2.5	3.0
1/4/17	1.0	1.0	3.5	4.0	5.0	3.0	2.5	2.5
1/9/17	1.0	1.0	3.5	4.0	4.5	3.0	2.5	2.5
1/18/17	1.0	1.0	3.0	4.0	4.5	3.5	3.0	3.0
1/23/17	1.0	1.0	3.5	4.0	4.5	3.0	2.5	3.0
1/31/17	1.0	1.0	3.2	3.9	4.5	3.1	2.9	3.0

In addition to the vacuum piezometer readings, TRS also collects groundwater elevation measurement readings daily through automated data collection. As mentioned in the previous report, on Thursday January 26, 2017 the device that records the groundwater elevation measurement readings reached the end of its battery life. With the approval of the IEPA TRS replaced four of the eight piezometers that monitor the groundwater in and around the reduced treatment area. The piezometers that were replaced were GWP E3, GWP F3, GWP G5, and GWP H6. All four piezometers were replaced during the reporting period and confirmed to be functioning properly on Friday February 3, 2017. The groundwater elevation readings are presented graphically in **Figures 4a** through **4b**. As the readings show, there are fluctuations occurring within the piezometers, but the changes are consistent inside and outside the treatment volume showing drawdown inside, indicating hydraulic control.

The GETS operated with ground water pumping well EW1 online during this operational period, recovering about 30 gpm from the well. EW1 is located north of the treatment volume, on Marshall Street.

## Planned Activities

TRS personnel will visit the Site the week of February 6, 2017 to collect operations data, optimize the system, and perform weekly system maintenance.

Should you have any questions concerning this report, or if you would like any additional information, please contact either me or Chris Thomas by phone at (360) 560-7551 and (847) 376-3691, respectively.

Sincerely,  
TRS Group, Inc.



Bradley Morris  
Project Manager

Attachments: Table 3, 4, 5 - Vapor Concentrations  
Table 6 – LGAC performance  
Figure 1 – Site Plan  
Figure 2a – TMP D3 Temperature vs. Depth  
Figure 2b – TMP F4 (SS6) Temperature vs. Depth  
Figure 2c – TMP H3 Temperature vs. Depth  
Figure 2d – TMP K4 (SS1) Temperature vs. Depth  
Figure 2e – TMP K5 Temperature vs. Depth  
Figure 2f – TMP K7 (SS8) Temperature vs. Depth  
Figure 2g – TMP M5 Temperature vs. Depth  
Figure 3 – Subsurface Temperatures vs. Time  
Figure 4a – GWP E3 and F3  
Figure 4b – GWP G5 and H6  
Figure 5 – ERH Performance

cc/att: Chris Thomas, TRS  
Tim Warner, TRS

## Attachments

**Table 3 Vapor Influent and Effluent PID Monitoring Results**

Date	Blower Flow Rate (scfm)	Influent Conc (ppm)	Effluent Conc (ppm)	VOC Recovery Rate (lbs/day)	Total VOC Recovery (lbs)	VOC Discharge Rate (lbs/day)	Total HAPS Discharged (lbs)	Total VOC Discharged (lbs)	LAB Total VOC Recovery Rate (lbs/day)
10/17/16	830	25.6	0.0	10.4	0.0	0.0	0.0	0.0	
10/18/16	830	53.4	0.0	21.7	15.0	0.0	0.0	0.0	8.1
10/19/16	830	37.0	0.0	15.0	29.7	0.0	0.0	0.0	
10/24/16	834	50.2	0.0	20.5	119	0.0	0.0	0.0	
10/25/16	837	55.2	0.0	22.6	145	0.0	0.0	0.0	46.5
10/26/16	839	67.9	0.0	27.8	168	0.0	0.0	0.0	
10/27/16	850	81.0	0.0	33.6	193	0.0	0.0	0.0	
10/28/16	861	96.0	1.0	40.4	233	0.4	0.0	0.2	
10/31/16	860	110.0	3.0	46.2	365	1.3	0.2	2.8	
11/1/16	845	83.0	8.0	34.3	399	3.3	0.3	4.7	56.0
11/2/16	859	105.0	7.0	44.1	440	2.9	0.6	7.9	
11/3/16	860	160.0	15.0	67.2	497	6.3	0.9	12.8	
11/7/16	860	143.3	52.3	60.2	752	22.0	4.9	69.3	61.9
11/10/16	869	142.7	45.1	60.6	946	19.1	9.5	135	
11/14/16	860	70.0	53.0	29.4	1,122	22.3	15.1	216	
11/16/16	878	172.0	92.0	73.8	1,215	39.5	19.0	272	
11/18/16	824	127.0	82.0	51.1	1,341	33.0	24.1	345	
11/23/16	800	200.0	0.0	78.2	1,684	0.0	30.3	433	240.4
11/29/16	802	212.0	156.0	83.1	2,138	61.1	42.3	604	
12/1/16	719	138.0	122.0	48.3	2,291	42.8	50.1	726	
12/5/16	708	102.7	136.5	35.5	2,452	47.2	62.9	899	
12/6/16	711	126.1	123.0	43.8	2,498	42.7	66.6	951	50.9



Date	Blower Flow Rate (scfm)	Influent Conc (ppm)	Effluent Conc (ppm)	VOC Recovery Rate (lbs/day)	Total VOC Recovery (lbs)	VOC Discharge Rate (lbs/day)	Total HAPS Discharged (lbs)	Total VOC Discharged (lbs)	LAB Total VOC Recovery Rate (lbs/day)
12/16/16	770	206.0	202.0	77.5	3,064	76.0	105.3	1,505	
12/21/16	776	104	101	39.4	3,393	38.3	105.3	1,505	8.1
12/23/16	886	120	117	51.9	3,473	50.6	105.3	1,505	
1/3/17	871	111.0	132.0	47.2	4,032	56.2	175.4	2,506	17.8
1/9/17	879	124.9	100.0	53.7	4,331	43.0	196.0	2,800	
1/10/17	271	135.0	110.0	17.9	4,368	14.6	198.1	2,830	
1/11/17	762	71.6	65.0	26.7	4,388	24.2	199.3	2,847	
1/17/17	857	40.1	50.0	16.8	4,520	20.9	212.6	2,984	
1/23/17	848	173.4	100.0	71.8	4,784	41.4	227.4	3,249	
1/25/17	853	300.0	250.0	124.9	4,966	104.1	236.9	3,384	76.6
1/26/17	859	268.7	180.0	112.7	5,108	75.5	244.3	3,490	
1/31/17	830	66	86	26.8	5,455	34.9	263.6	3,765	
2/6/17	782	100.9	80	38.6	5,650	30.6	277.3	3,961	

**Table 4 TO 15 Influent to VGAC**

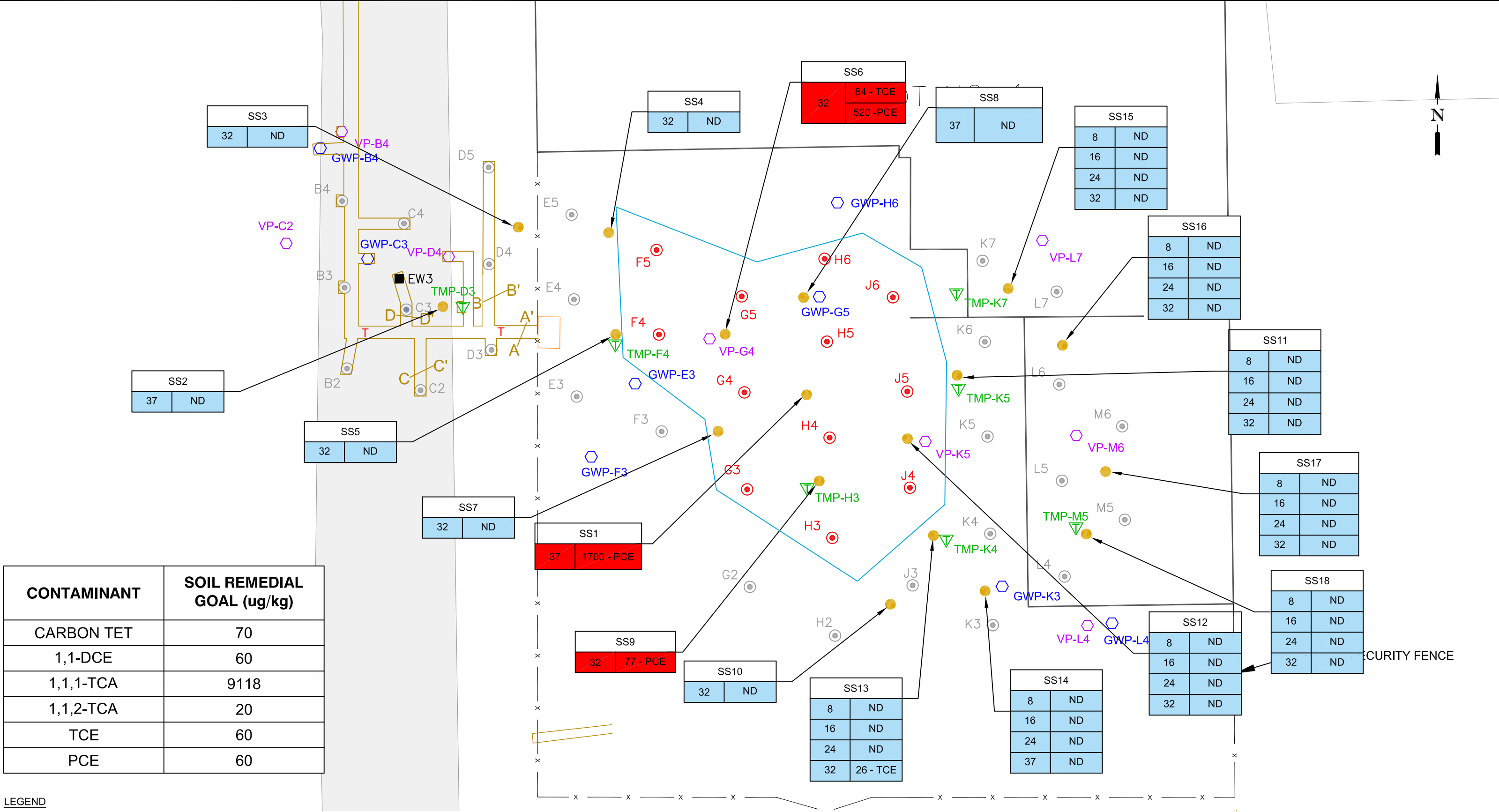
<b>Date</b>	<b>1,1,1 TCA (ug/m3)</b>	<b>1,1 DCE (ug/m3)</b>	<b>1,1 DCA (ug/m3)</b>	<b>Other TO-15 (ug/m3)</b>	<b>Other as Decane (ug/m3)</b>	<b>Total VOCs (ug/m3)</b>	<b>Total VOC Recovery Rate (lbs/day)</b>
10/18/16	100,000	280	3,400	5,450	NS	109,130	8
10/25/16	50,000	7,200	1,700	6,900	469,690	620,095	47
11/1/16	53,000	29,000	430	23,670	633,670	739,770	56
11/7/16	13,000	16,000	2,800	21,625	749,022	802,447	62
11/23/16	1,800	1,800	590	121,860	5,330,521	5,456,571	391
12/6/16	540	2,000	210	20,610	774,873	798,233	51
12/22/16	200	150	18	9,396	106,610	116,374	8
1/3/17	230	170	33	6,474	220,836	227,743	18
1/25/17	130	600	39	34,647	967,051	1,002,467	77

**Table 5 TO 15 Effluent from VGAC**

<b>Date</b>	<b>1,1,1 TCA Conc. (ug/m3)</b>	<b>1,1 DCE Conc. (ug/m3)</b>	<b>1,1 DCA Conc. (ug/m3)</b>	<b>Other TO-15 (ug/m3)</b>	<b>Other as Decane (ug/m3)</b>	<b>Total VOCs (ug/m3)</b>	<b>Total HAPS Discharge Rate (lb/day)</b>	<b>Total VOC Discharge Rate (lb/day)</b>
10/18/16	47	ND	ND	410	NS	457	0.03	0
10/25/16	5,200	110	430	17	NS	5,757	0.43	0
11/1/16	72,000	8,300	ND	ND	NS	80,300	6.08	6
11/7/16	100,000	15,000	5,800	1,370	NS	122,170	9.42	9
11/23/16	79	48	15	233	20,532	20,907	0.03	2
12/6/16	1,200	3,200	120	6,600	860,440	871,561	0.71	56
12/22/16	300	230	34	11,476	233,921	245,961	0.84	17
1/3/17	250	220	36	5,812	389,064	395,382	0.49	31
1/25/17	130	910	48	8,957	473,236	483,282	0.77	37

**Table 6 LGAC and GETS discharge data**

	10/18/16	10/25/16	11/1/16	11/7/16	11/23/16	12/6/16	12/22/16	1/3/17	1/25/17
Temperature (F)	75	80	85	84	85	57	--	50	78
pH	8.1	8.0	8.6	9	8.1	9.0	--	8.2	8.0
Pre LGAC Carbon Tetrachloride	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pre LGAC DCE	ND	8.4	17	15.0	ND	ND	ND	ND	ND
Pre LGAC 1,1,1 - TCA	47	110	69	24	2.6	ND	ND	ND	ND
Pre LGAC 1,1,2 - TCA	0	1.5	2	2	ND	ND	ND	ND	ND
Pre LGAC TCE	ND	1.1	1	0,72	ND	ND	ND	ND	ND
Pre LGAC PCE	ND	ND	ND	1	ND	ND	ND	ND	ND
Pre LGAC Total Contaminants Concentration	248	457	300	1,014	4,446	1,718	6,282	2,614.1	2,241.0
Mid LGAC Carbon Tetrachloride	ND	ND	ND	LGAC off	ND	ND	ND	ND	ND
Mid LGAC DCE	ND	ND	ND		ND	ND	ND	ND	ND
Mid LGAC 1,1,1 - TCA	ND	ND	ND		2.5	1.2	ND	ND	ND
Mid LGAC 1,1,2 - TCA	ND	ND	ND		ND	ND	ND	ND	ND
Mid LGAC TCE	ND	ND	ND		ND	ND	ND	3.4	ND
Mid LGAC PCE	ND	ND	ND		ND	ND	ND	ND	ND
Mid LGAC Total Contaminants Concentration	191	193	0		1,503	932	5,368	2,621.4	2,201.0
Post LGAC Carbon Tetrachloride	ND	ND	ND	LGAC off	ND	ND	ND	ND	ND
Post LGAC DCE	ND	ND	ND		ND	ND	ND	ND	ND
Post LGAC 1,1,1 - TCA	ND	ND	ND		ND	ND	ND	ND	ND
Post LGAC 1,1,2 - TCA	ND	ND	ND		ND	ND	ND	ND	ND
Post LGAC TCE	ND	ND	ND		ND	ND	ND	8.6	ND
Post LGAC PCE	ND	ND	ND		ND	ND	ND	ND	ND
Post LGAC Total Contaminants Concentration	249.0	214.9	24		228	485	3,683	1,974.5	1,624.4



LICENSED PROFESSIONAL ENGINEER  
DANIEL W. OBERLE  
062.066003  
OF ILLINOIS  
06/15/16  
ENGINEER SIGNATURE / DATE

**TRS**  
Accelerating Value

TRS GROUP, INC. 338 COMMERCE AVE., SUITE 304, LONGVIEW, WA 98632

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DESIGNED BY C. LANSING	SITE LOCATION SOUTHEAST ROCKFORD AREA 4 ROCKFORD, ILLINOIS		
DRAWN BY A. WAGNER	CLIENT IL, EPA		
CHECKED BY D. OBERLE	FIGURE 1		
PROJECT MANAGER B. MORRIS	APPROVED FOR CONSTRUCTION BY <u>Daniel Oberle</u>	DATE 01/22/17	PROJECT RFD75
QSAT REVIEW 06/06/16	DATE 06/15/16	SHEET	



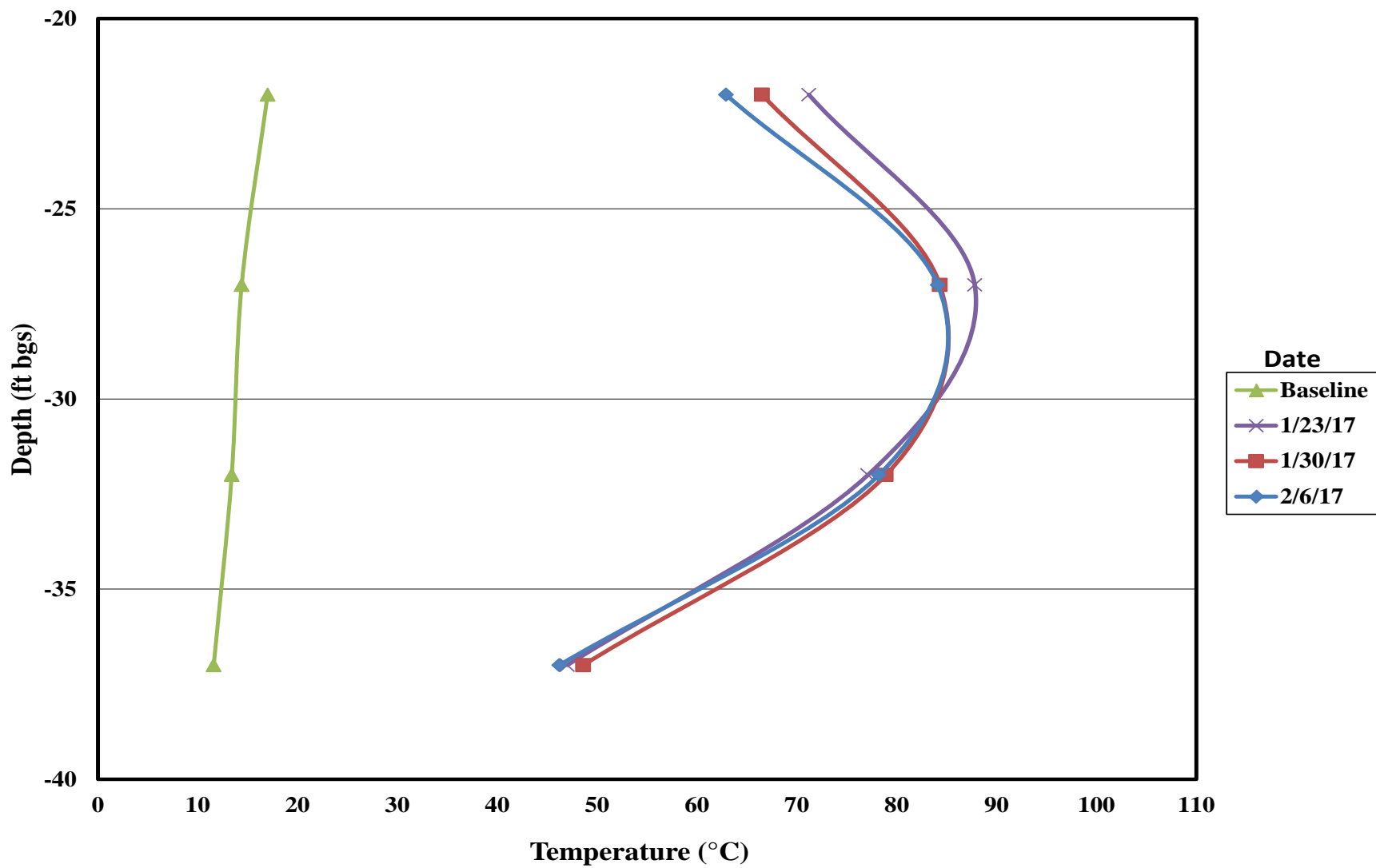


Figure 2a. TMP D3 Temperature vs. Depth

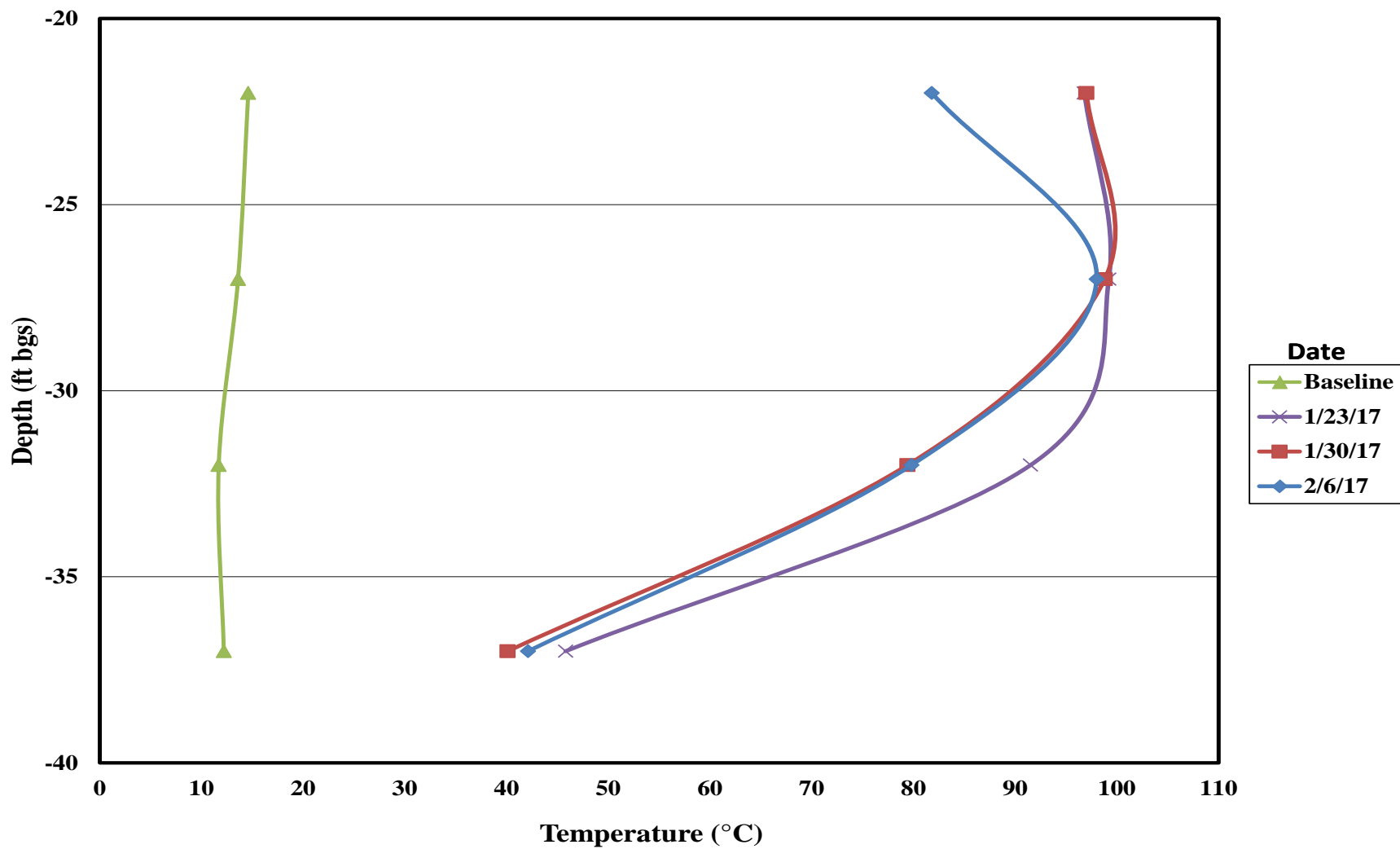


Figure 2b. TMP F4 Temperature vs. Depth

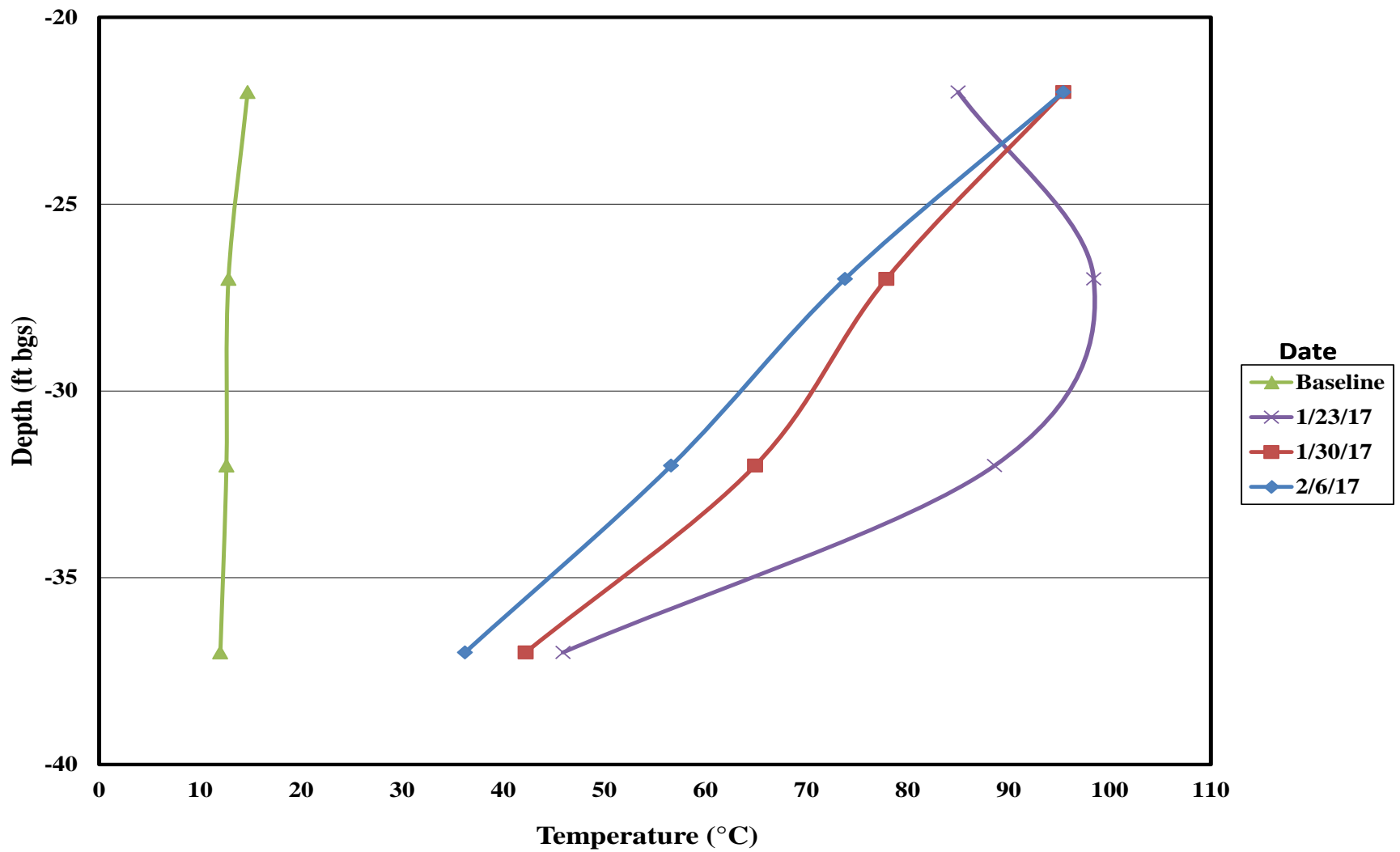


Figure 2c. TMP H3 Temperature vs. Depth

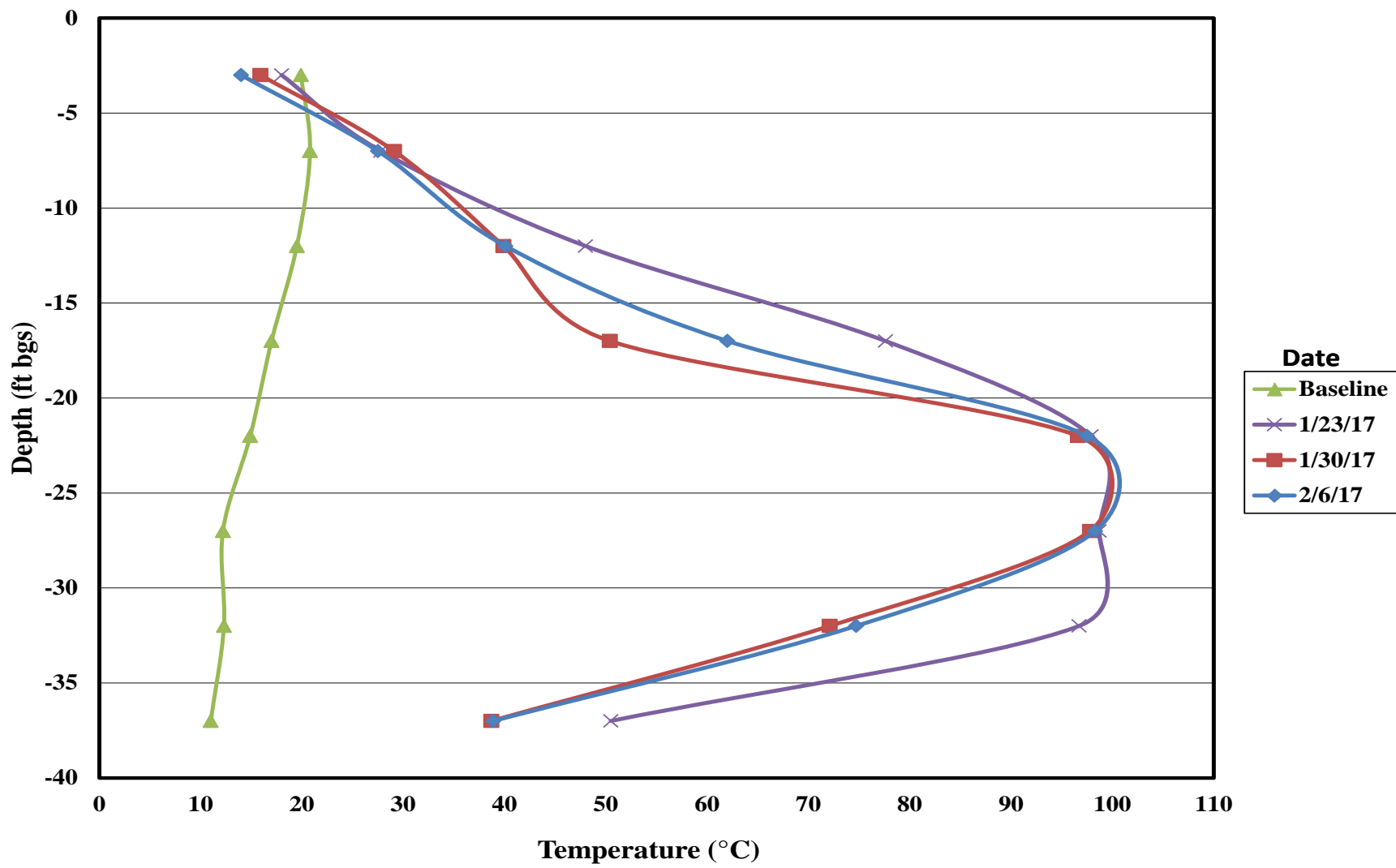


Figure 2d. TMP K4 Temperature vs. Depth

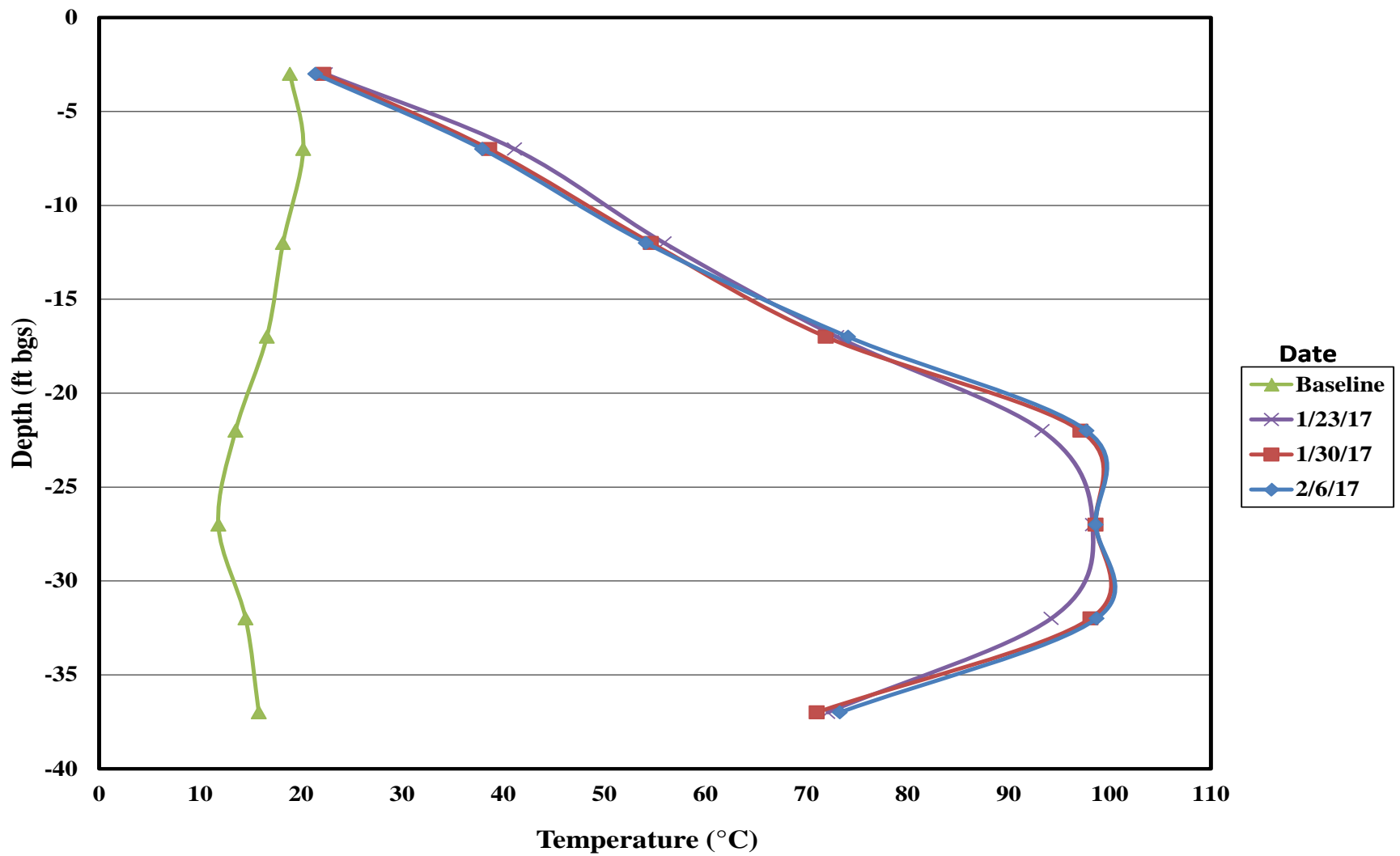


Figure 2e. TMP K5 Temperature vs. Depth



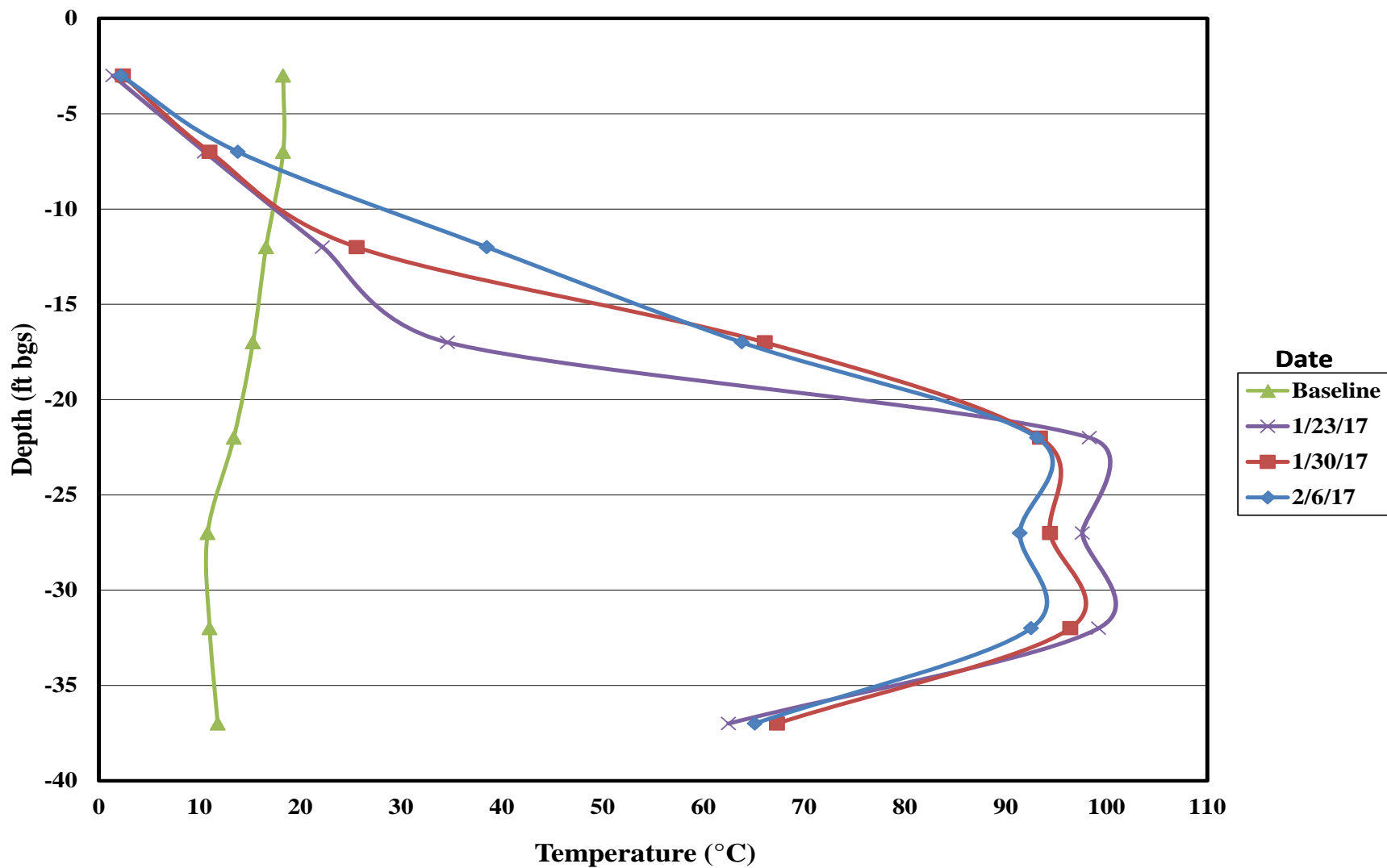


Figure 2f. TWP K7 (SS8) Temperature vs. Depth

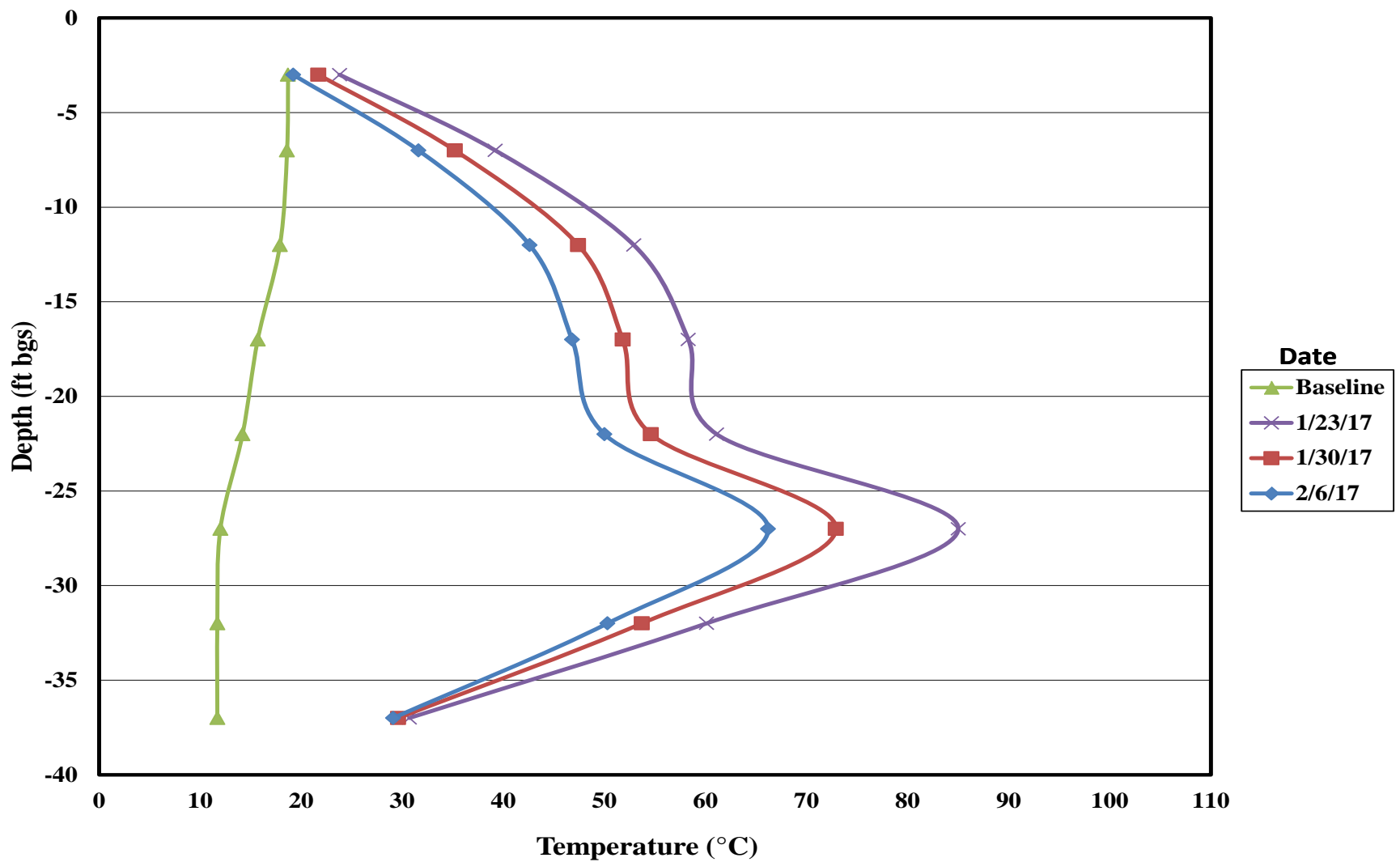
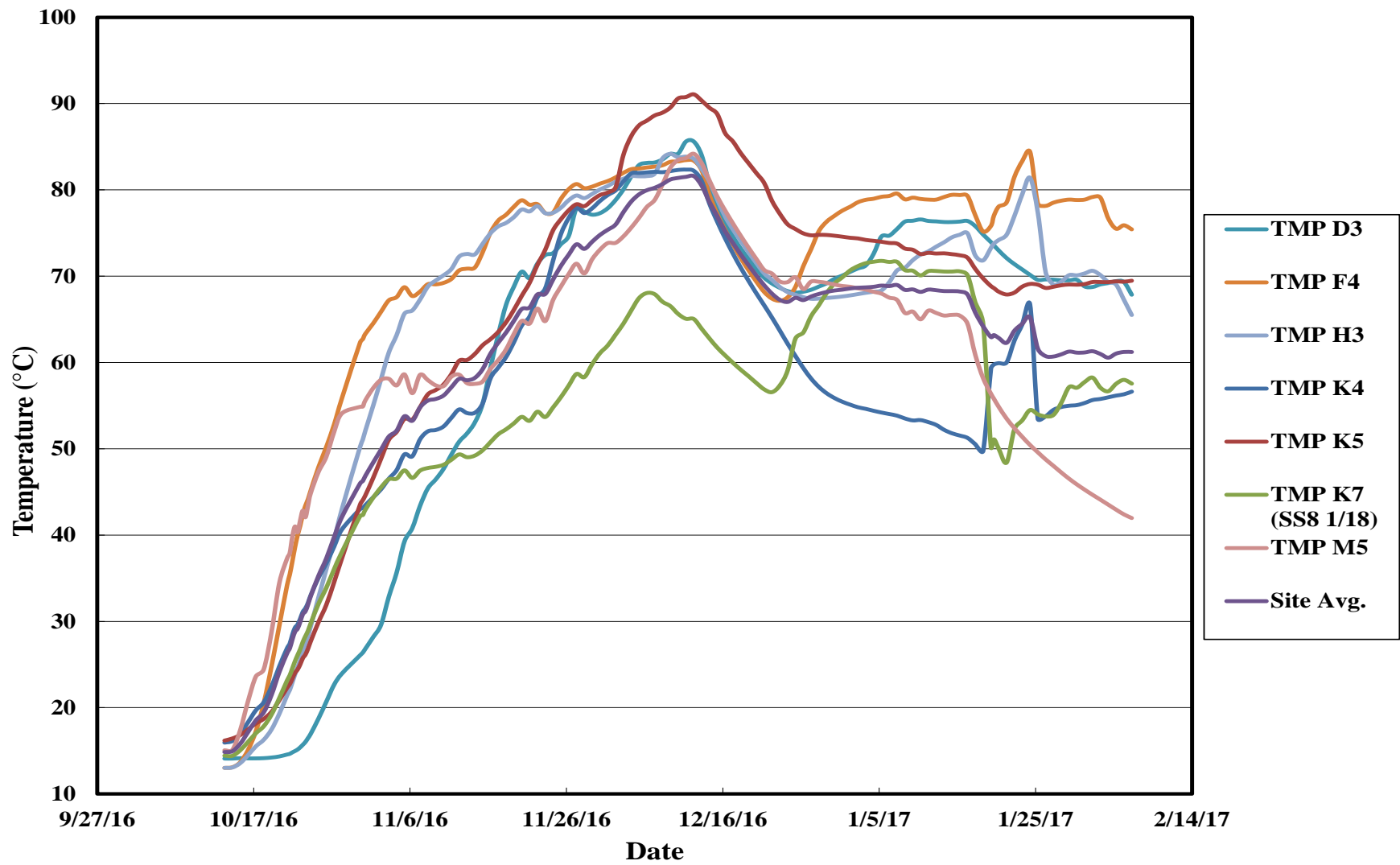


Figure 2g. TMP M5 Temperature vs. Depth



**Figure 3.** Subsurface Temperatures vs. Time

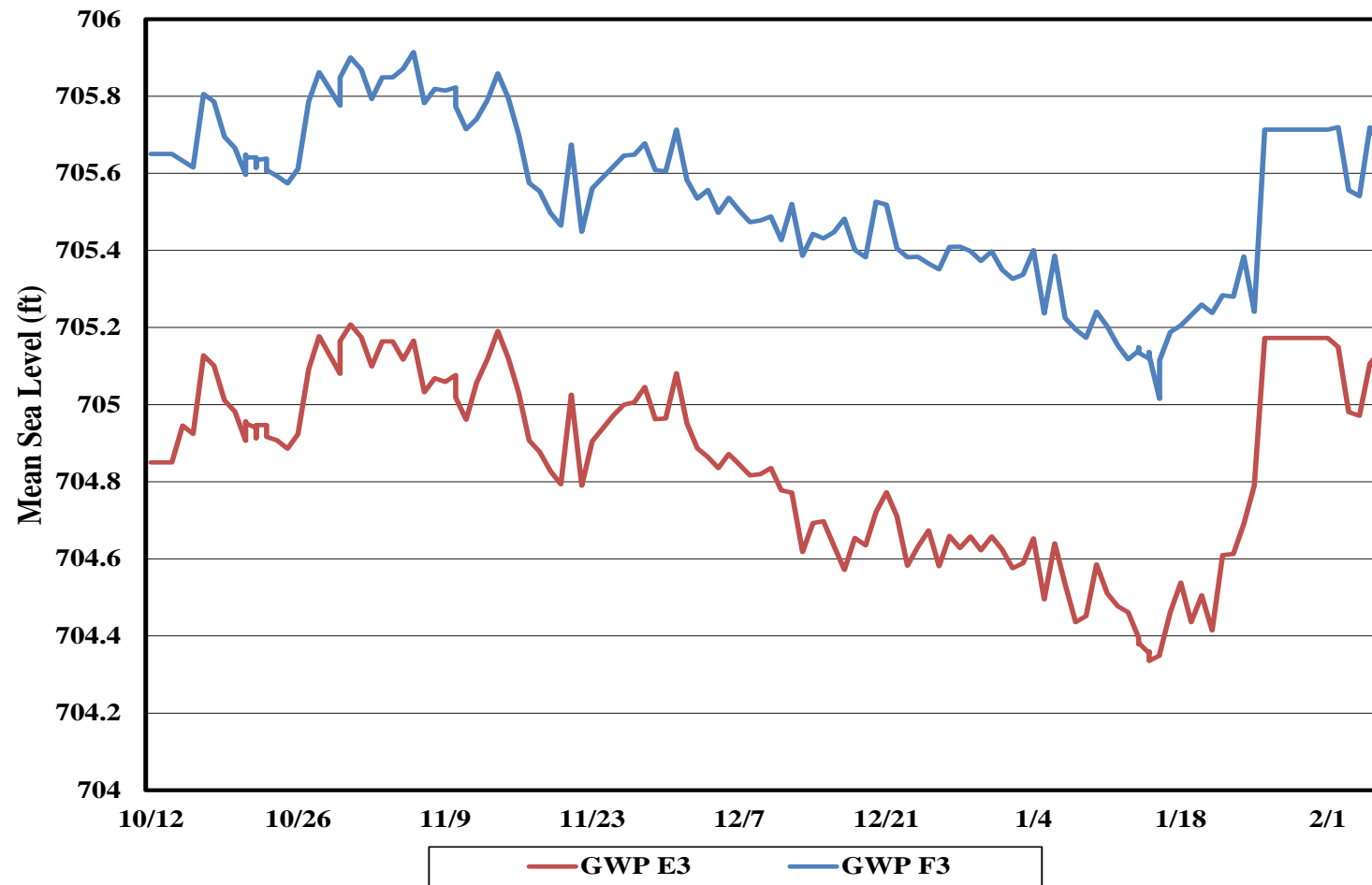
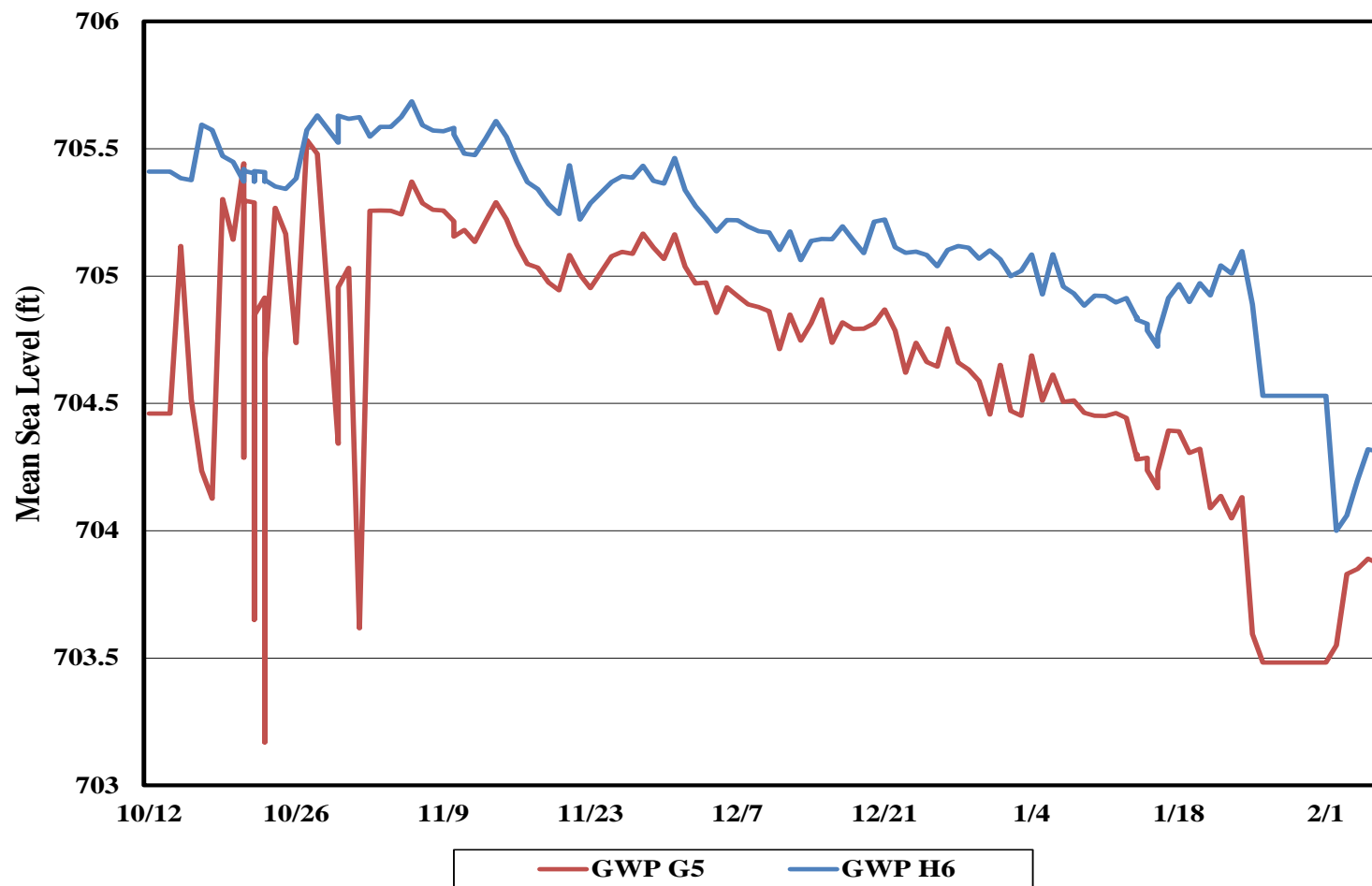
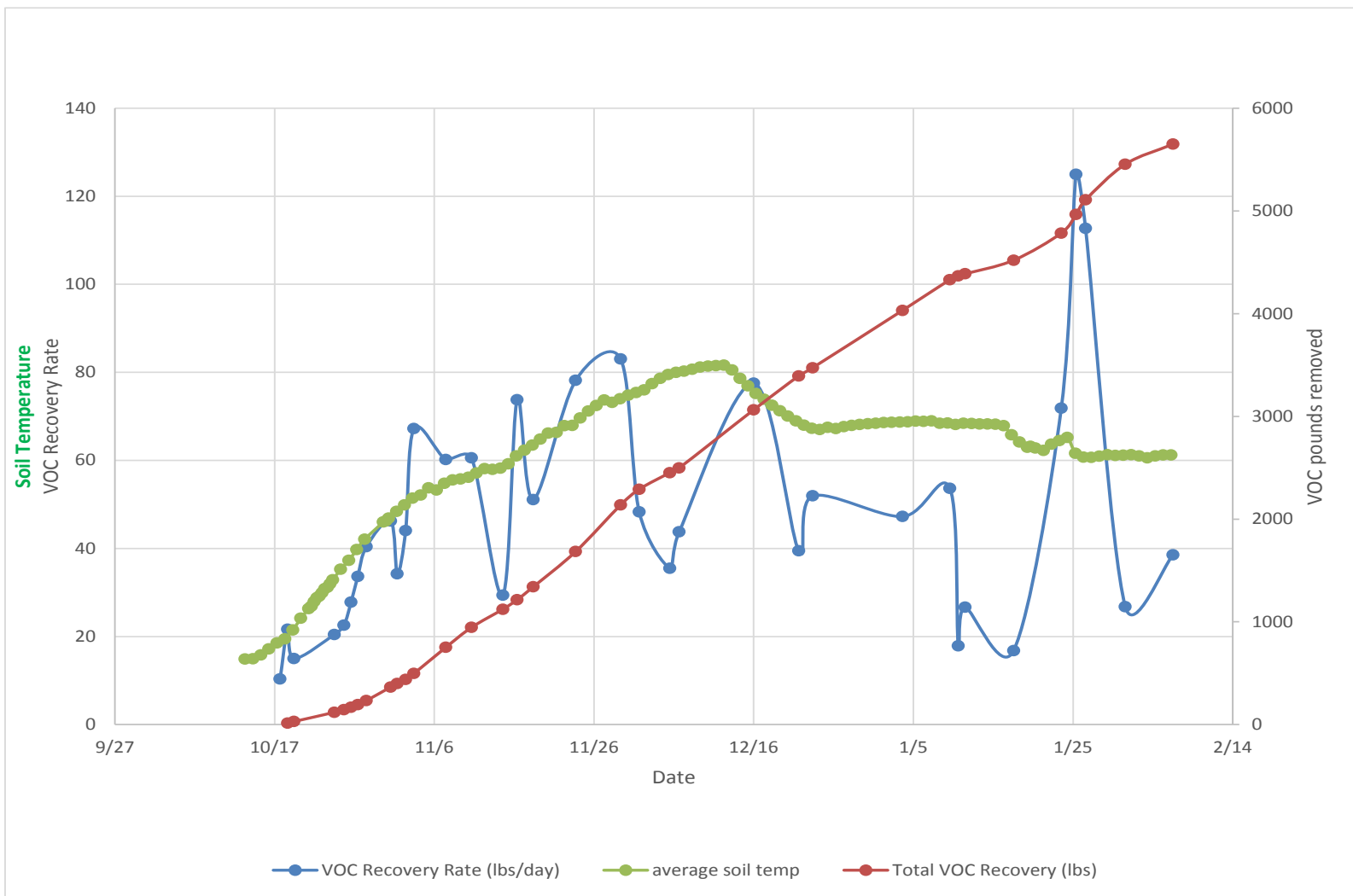


Figure 4a. GWP E3 and GWP F3



**Figure 4b.** GWP G5 and GWP H6





**Figure 5. ERH Performance**



February 15, 2017

Mr. Brian Conrath  
Remedial Project Manager  
Illinois Environmental Protection Agency  
1021 N. Grand Ave. East  
Springfield, Illinois 62702  
(217) 557-8155  
Brian.Conrath@Illinois.gov

**Subject: ERH Weekly Report**  
**February 6, 2017 to February 13, 2017**  
**Southeast Rockford Groundwater Contamination Site Area 4**  
**2630 Marshall Street, Rockford, Illinois.**

Dear Mr. Conrath,

This letter report contains a brief description of the Electrical Resistance Heating (ERH) remediation operations performed at 2630 Marshall Street, Rockford, Illinois (the Site). The time period addressed in this report is from February 6 to February 13, 2017.

### **ERH Application Summary**

The ERH system operational parameters through February 13, 2017 are presented below in **Table 1**.

**Table 1. Key ERH System Operational Parameters**

<b>ERH System Parameters</b>	<b>February 6</b>	<b>February 13</b>
Weekly Average Power (kW)	408	385
Cumulative Energy Applied (kWh)	1,260,500	1,325,900
Average Subsurface Temperature (°C)	61.2	60.2
Average Vapor System Flow Rate (scfm)	816	785
Duration of System Shutdown (approximate hours)	0	0
Discharge to GETS flow rate (gpm)	0.9	0.8
Total water discharged to GETS	98,320	106,384

The ERH system did not experience any shut downs and the PCU, vapor recovery, and vapor abatement systems operated within design parameters during the reporting period.

### **Temperatures**

The highest individual temperature measurement within the treatment volume was 98.8°C. This was recorded at TMP K5 at 27-feet below ground surface (ft bgs) on Monday February 13, 2017.

The average subsurface temperature in the treatment area remained relatively constant with a slight decrease from 61.2 degrees Celsius (°C) to 60.2°C during the reporting period. As mentioned in the previous reports, following the implementation of the air addition system, the RTD bundles that had been temporarily installed in wells SS1 and SS6 were returned to their original TMP casings resulting in only one RTD bundle, located at SS8, remaining within the reduced focus area.

To illustrate the treatment volume temperature change, the data is presented in seven separate graphs based on TMP location. Temperatures relative to depth for each TMP are presented in **Figures 2a** through **2g**. Average subsurface temperature over time is presented in **Figure 3**.

### **Power and Energy**

The PCU averaged 385 kilowatts (kW) of applied power to the treatment volume during the reporting period. A total of 1,325,900 kilowatt-hours (kWh) of energy have been applied to the subsurface as of February 13, 2017.

### **ERH Vapor Recovery**

During this reporting period, the average vacuum applied to the subsurface, as measured at the condenser inlet, was approximately 6.7 inches of mercury (in Hg). The vapor stream flow rate, as measured after the vapor recovery blower, averaged 785 standard cubic feet per minute (scfm).

Vapor samples are collected from the influent and effluent of the vapor-phase granular activated carbon (VGAC) system whenever TRS is onsite. Analysis is performed using a photoionization detector (PID) MiniRae 3000. In accordance with the Work Plan, vapor samples are also collected once per week during the first four weeks of operations and then bimonthly thereafter. The vapor samples were sent offsite for analysis by Method TO-15, including a listing of tentatively identified compounds, in an attempt to quantify the heavier compounds recovered by the vapor recovery system. Of note, PCE vapor concentrations declined dramatically during the reporting period.

The available results of the PID and TO-15 analysis can be found in the attached **Table 3**, **Table 4** and **Table 5**. The PID readings and TO-15 data confirm that the VGAC system is performing as designed and operating in accordance with the substantive discharge requirements. Based on PID readings, TRS estimates that approximately 5,709 pounds of volatile organic compounds (VOCs) have been removed from the treatment volume.

### **ERH Process Water**

During this reporting period, the ERH system discharged 8,064 gallons to the Groundwater Extraction and Treatment System (GETS) at an average rate of 0.8 gallons per minute (gpm). To date a total of 106,384 gallons has been discharged to the GETS. The water recovered by the ERH system is passed through a particulate filter and two liquid-phase granular activated carbon (LGAC) vessels arranged in series prior to discharge to the GETS. The water recovered and treated with LGAC prior to being sent to the GETS is now being analyzed for VOCs twice per month by an offsite laboratory. The results of these analyses are provided in **Table 6**. The LGAC system has been working as designed.

## Groundwater and Vacuum Piezometers

TRS collects vacuum piezometer readings at least once a week while onsite to illustrate full vacuum influence across the Site. The readings collected to date are presented in **Table 2**.

**Table 2 Site VP Readings (inches water column)**

<b>Date/Time</b>	<b>VP-B4</b>	<b>VP-C2</b>	<b>VP-D4</b>	<b>VP-G4</b>	<b>VP-K5</b>	<b>VP-L4</b>	<b>VP-L7</b>	<b>VP-M6</b>
10/14/16	1.0	1.0	3.0	8.0	8.5	3.0	3.0	4.0
10/18/16	1.5	1.5	4.0	8.8	8.0	3.0	3.3	3.5
10/24/16	1.5	1.5	3.5	5.5	6.5	2.5	3.0	3.0
11/2/16	1.5	1.5	4.0	5.0	6.5	2.5	3.0	3.5
11/10/16	1.0	1.0	4.5	5.0	7.0	2.5	2.5	3.5
11/15/16	1.0	1.0	4.0	4.5	7.0	3.0	2.5	3.0
11/21/16	1.5	1.5	3.5	5.0	6.5	3.0	3.0	3.0
11/29/16	1.0	1.0	3.0	4.5	6.0	2.5	2.5	3.0
12/5/16	1.5	1.5	4.0	5.0	6.0	3.0	3.0	3.0
12/14/16	1.0	1.0	3.5	4.5	5.5	2.5	2.5	2.5
12/21/16	1.0	1.0	4.0	4.5	5.5	3.0	2.5	3.0
1/4/17	1.0	1.0	3.5	4.0	5.0	3.0	2.5	2.5
1/9/17	1.0	1.0	3.5	4.0	4.5	3.0	2.5	2.5
1/18/17	1.0	1.0	3.0	4.0	4.5	3.5	3.0	3.0
1/23/17	1.0	1.0	3.5	4.0	4.5	3.0	2.5	3.0
1/31/17	1.0	1.0	3.2	3.9	4.5	3.1	2.9	3.0
2/6/17	1.0	1.0	3.5	4.0	4.0	3.0	3.0	3.0

In addition to the vacuum piezometer readings, TRS also collects groundwater elevation measurement readings daily through automated data collection. As mentioned in the previous report, on Thursday January 26, 2017 the device that records the groundwater elevation measurement readings reached the end of its battery life. With the approval of the IEPA TRS replaced four of the eight piezometers that monitor the groundwater in and around the reduced treatment area. The piezometers that were replaced were GWP E3, GWP F3, GWP G5, and GWP H6. All four piezometers were replaced during the previous reporting period and confirmed to be functioning properly on Friday February 3, 2017. The groundwater elevation readings are presented graphically in **Figures 4a** through **4b**. As the readings show, there are fluctuations occurring within the piezometers, but the changes are consistent inside and outside the treatment volume showing drawdown inside, indicating hydraulic control.

The GETS operated with ground water pumping well EW1 online during this operational period, recovering about 30 gpm from the well. EW1 is located north of the treatment volume, on Marshall Street.

## Planned Activities

TRS personnel will visit the Site the week of February 13, 2017 to collect operations data, optimize the system, and perform weekly system maintenance. TRS will also be conducting the third confirmation soil sampling event on Thursday February 16, 2017.

Should you have any questions concerning this report, or if you would like any additional information, please contact either me or Chris Thomas by phone at (360) 560-7551 and (847) 376-3691, respectively.

Sincerely,  
TRS Group, Inc.



Bradley Morris  
Project Manager

Attachments: Table 3, 4, 5 - Vapor Concentrations  
Table 6 – LGAC performance  
Figure 1 – Site Plan  
Figure 2a – TMP D3 Temperature vs. Depth  
Figure 2b – TMP F4 (SS6) Temperature vs. Depth  
Figure 2c – TMP H3 Temperature vs. Depth  
Figure 2d – TMP K4 (SS1) Temperature vs. Depth  
Figure 2e – TMP K5 Temperature vs. Depth  
Figure 2f – TMP K7 (SS8) Temperature vs. Depth  
Figure 2g – TMP M5 Temperature vs. Depth  
Figure 3 – Subsurface Temperatures vs. Time  
Figure 4a – GWP E3 and F3  
Figure 4b – GWP G5 and H6  
Figure 5 – ERH Performance

cc/att: Chris Thomas, TRS  
Tim Warner, TRS



## Attachments

**Table 3 Vapor Influent and Effluent PID Monitoring Results**

Date	Blower Flow Rate (scfm)	Influent Conc (ppm)	Effluent Conc (ppm)	VOC Recovery Rate (lbs/day)	Total VOC Recovery (lbs)	VOC Discharge Rate (lbs/day)	Total HAPS Discharged (lbs)	Total VOC Discharged (lbs)	LAB Total VOC Recovery Rate (lbs/day)
10/17/16	830	25.6	0.0	10.4	0.0	0.0	0.0	0.0	
10/18/16	830	53.4	0.0	21.7	15.0	0.0	0.0	0.0	8.1
10/19/16	830	37.0	0.0	15.0	29.7	0.0	0.0	0.0	
10/24/16	834	50.2	0.0	20.5	119	0.0	0.0	0.0	
10/25/16	837	55.2	0.0	22.6	145	0.0	0.0	0.0	46.5
10/26/16	839	67.9	0.0	27.8	168	0.0	0.0	0.0	
10/27/16	850	81.0	0.0	33.6	193	0.0	0.0	0.0	
10/28/16	861	96.0	1.0	40.4	233	0.4	0.0	0.2	
10/31/16	860	110.0	3.0	46.2	365	1.3	0.2	2.8	
11/1/16	845	83.0	8.0	34.3	399	3.3	0.3	4.7	56.0
11/2/16	859	105.0	7.0	44.1	440	2.9	0.6	7.9	
11/3/16	860	160.0	15.0	67.2	497	6.3	0.9	12.8	
11/7/16	860	143.3	52.3	60.2	752	22.0	4.9	69.3	61.9
11/10/16	869	142.7	45.1	60.6	946	19.1	9.5	135	
11/14/16	860	70.0	53.0	29.4	1,122	22.3	15.1	216	
11/16/16	878	172.0	92.0	73.8	1,215	39.5	19.0	272	
11/18/16	824	127.0	82.0	51.1	1,341	33.0	24.1	345	
11/23/16	800	200.0	0.0	78.2	1,684	0.0	30.3	433	240.4
11/29/16	802	212.0	156.0	83.1	2,138	61.1	42.3	604	
12/1/16	719	138.0	122.0	48.3	2,291	42.8	50.1	726	
12/5/16	708	102.7	136.5	35.5	2,452	47.2	62.9	899	
12/6/16	711	126.1	123.0	43.8	2,498	42.7	66.6	951	50.9

Date	Blower Flow Rate (scfm)	Influent Conc (ppm)	Effluent Conc (ppm)	VOC Recovery Rate (lbs/day)	Total VOC Recovery (lbs)	VOC Discharge Rate (lbs/day)	Total HAPS Discharged (lbs)	Total VOC Discharged (lbs)	LAB Total VOC Recovery Rate (lbs/day)
12/16/16	770	206.0	202.0	77.5	3,064	76.0	105.3	1,505	
12/21/16	776	104	101	39.4	3,393	38.3	105.3	1,505	8.1
12/23/16	886	120	117	51.9	3,473	50.6	105.3	1,505	
1/3/17	871	111.0	132.0	47.2	4,032	56.2	175.4	2,506	17.8
1/9/17	879	124.9	100.0	53.7	4,331	43.0	196.0	2,800	
1/10/17	271	135.0	110.0	17.9	4,368	14.6	198.1	2,830	
1/11/17	762	71.6	65.0	26.7	4,388	24.2	199.3	2,847	
1/17/17	857	40.1	50.0	16.8	4,520	20.9	212.6	2,984	
1/23/17	848	173.4	100.0	71.8	4,784	41.4	227.4	3,249	
1/25/17	853	300.0	250.0	124.9	4,966	104.1	236.9	3,384	76.6
1/26/17	859	268.7	180.0	112.7	5,108	75.5	244.3	3,490	
1/31/17	830	66	86	26.8	5,455	34.9	263.6	3,765	
2/6/17	782	100.9	80	38.6	5,650	30.6	277.3	3,961	
2/7/17	756	68.8	58.1	25.4	5,684	21.5	279.2	3,989	32.8
2/8/17	782	91.5	55.3	35.0	5,709	21.1	280.4	4,006	

**Table 4 TO 15 Influent to VGAC**

<b>Date</b>	<b>1,1,1 TCA (ug/m3)</b>	<b>1,1 DCE (ug/m3)</b>	<b>1,1 DCA (ug/m3)</b>	<b>Other TO-15 (ug/m3)</b>	<b>Other as Decane (ug/m3)</b>	<b>Total VOCs (ug/m3)</b>	<b>Total VOC Recovery Rate (lbs/day)</b>
10/18/16	100,000	280	3,400	5,450	NS	109,130	8
10/25/16	50,000	7,200	1,700	6,900	469,690	620,095	47
11/1/16	53,000	29,000	430	23,670	633,670	739,770	56
11/7/16	13,000	16,000	2,800	21,625	749,022	802,447	62
11/23/16	1,800	1,800	590	121,860	5,330,521	5,456,571	391
12/6/16	540	2,000	210	20,610	774,873	798,233	51
12/22/16	200	150	18	9,396	106,610	116,374	8
1/3/17	230	170	33	6,474	220,836	227,743	18
1/25/17	130	600	39	34,647	967,051	1,002,467	77
2/7/17	130	43	23	9,685	473,236	483,282	33

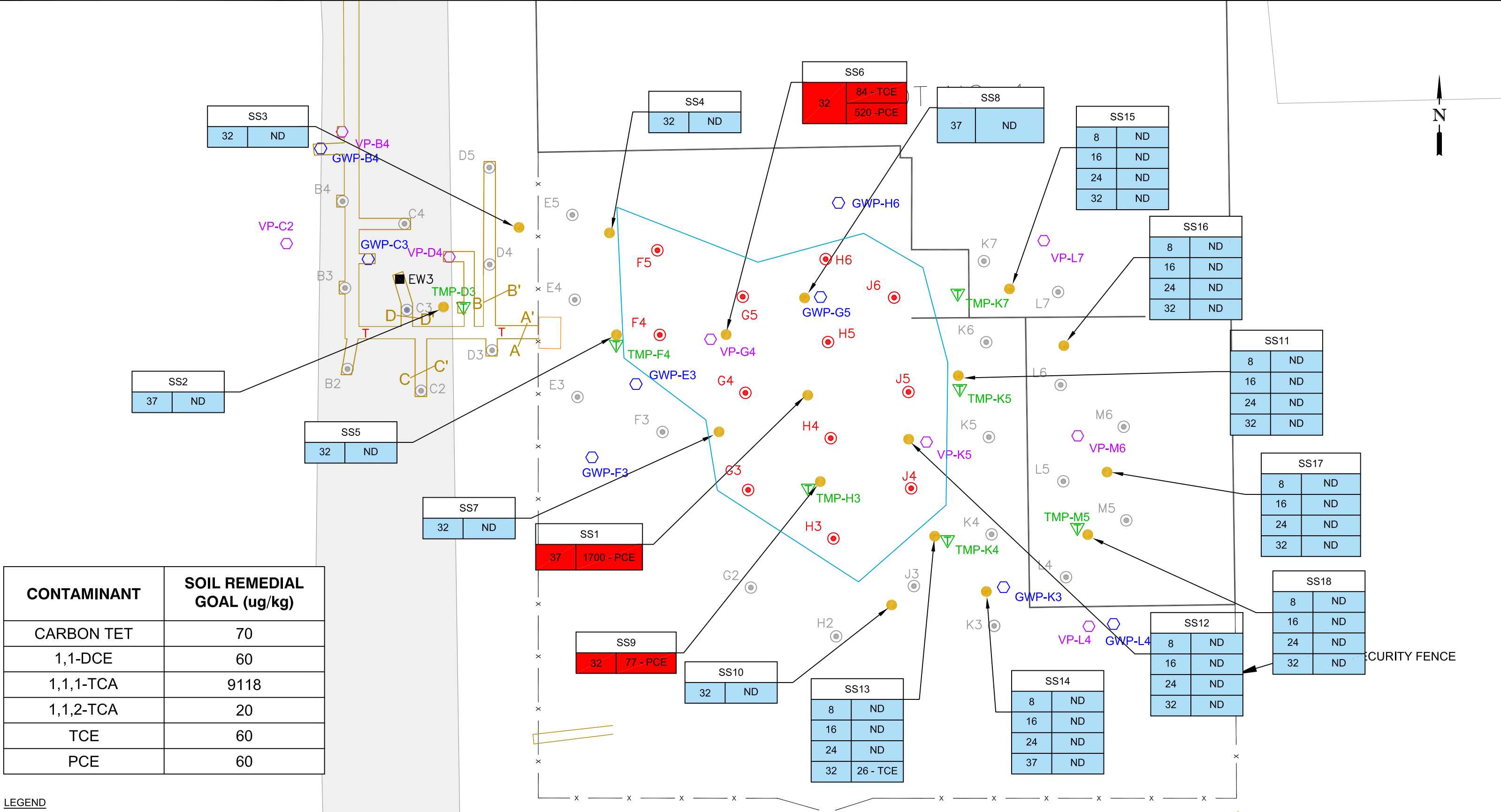
**Table 5 TO 15 Effluent from VGAC**

<b>Date</b>	<b>1,1,1 TCA Conc. (ug/m3)</b>	<b>1,1 DCE Conc. (ug/m3)</b>	<b>1,1 DCA Conc. (ug/m3)</b>	<b>Other TO-15 (ug/m3)</b>	<b>Other as Decane (ug/m3)</b>	<b>Total VOCs (ug/m3)</b>	<b>Total HAPS Discharge Rate (lb/day)</b>	<b>Total VOC Discharge Rate (lb/day)</b>
10/18/16	47	ND	ND	410	NS	457	0.03	0
10/25/16	5,200	110	430	17	NS	5,757	0.43	0
11/1/16	72,000	8,300	ND	ND	NS	80,300	6.08	6
11/7/16	100,000	15,000	5,800	1,370	NS	122,170	9.42	9
11/23/16	79	48	15	233	20,532	20,907	0.03	2
12/6/16	1,200	3,200	120	6,600	860,440	871,561	0.71	56
12/22/16	300	230	34	11,476	233,921	245,961	0.84	17
1/3/17	250	220	36	5,812	389,064	395,382	0.49	31
1/25/17	130	910	48	8,957	473,236	483,282	0.77	37



**Table 6 LGAC and GETS Discharge Data**

	10/18/16	10/25/16	11/1/16	11/7/16	11/23/16	12/6/16	12/22/16	1/3/17	1/25/17	2/7/17
Temperature (F)	75	80	85	84	85	57	--	50	78	53
pH	8.1	8.0	8.6	9	8.1	9.0	--	8.2	8.0	8.2
Pre LGAC Carbon Tetrachloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pre LGAC DCE	ND	8.4	17	15.0	ND	ND	ND	ND	ND	ND
Pre LGAC 1,1,1 - TCA	47	110	69	24	2.6	ND	ND	ND	ND	ND
Pre LGAC 1,1,2 - TCA	0	1.5	2	2	ND	ND	ND	ND	ND	ND
Pre LGAC TCE	ND	1.1	1	0,72	ND	ND	ND	ND	ND	ND
Pre LGAC PCE	ND	ND	ND	1	ND	ND	ND	ND	ND	ND
Pre LGAC Total Contaminants Concentration	248	457	300	1,014	4,446	1,718	6,282	2,614.1	2,241.0	2,299.0
Mid LGAC Carbon Tetrachloride	ND	ND	ND	LGAC off	ND	ND	ND	ND	ND	ND
Mid LGAC DCE	ND	ND	ND		ND	ND	ND	ND	ND	ND
Mid LGAC 1,1,1 - TCA	ND	ND	ND		2.5	1.2	ND	ND	ND	ND
Mid LGAC 1,1,2 - TCA	ND	ND	ND		ND	ND	ND	ND	ND	ND
Mid LGAC TCE	ND	ND	ND		ND	ND	ND	3.4	ND	ND
Mid LGAC PCE	ND	ND	ND		ND	ND	ND	ND	ND	ND
Mid LGAC Total Contaminants Concentration	191	193	0		1,503	932	5,368	2,621.4	2,201.0	2,331.0
Post LGAC Carbon Tetrachloride	ND	ND	ND	LGAC off	ND	ND	ND	ND	ND	ND
Post LGAC DCE	ND	ND	ND		ND	ND	ND	ND	ND	ND
Post LGAC 1,1,1 - TCA	ND	ND	ND		ND	ND	ND	ND	ND	ND
Post LGAC 1,1,2 - TCA	ND	ND	ND		ND	ND	ND	ND	ND	ND
Post LGAC TCE	ND	ND	ND		ND	ND	ND	8.6	ND	ND
Post LGAC PCE	ND	ND	ND		ND	ND	ND	ND	ND	ND
Post LGAC Total Contaminants Concentration	249.0	214.9	24		228	485	3,683	1,974.5	1,624.4	2,179.0



LICENSED PROFESSIONAL ENGINEER  
DANIEL W. OBERLE  
062.066003  
OF ILLINOIS  
06/15/16  
ENGINEER SIGNATURE / DATE

**TRS**  
Accelerating Value

TRS GROUP, INC. 338 COMMERCE AVE., SUITE 304, LONGVIEW, WA 98632

**CONFIDENTIAL:** INFORMATION CONTAINED IN THIS DOCUMENT IS CONFIDENTIAL AND THE PROPERTY OF TRS GROUP, INC. NO INFORMATION CONTAINED HEREIN MAY BE DUPLICATED, USED OR DISTRIBUTED WITHOUT THE EXPRESSED WRITTEN PERMISSION OF TRS GROUP, INC. LONGVIEW, WA.

DESIGNED BY C. LANSING	SITE LOCATION SOUTHEAST ROCKFORD AREA 4 ROCKFORD, ILLINOIS		
DRAWN BY A. WAGNER	CLIENT IL, EPA		
CHECKED BY D. OBERLE	FIGURE 1		
PROJECT MANAGER B. MORRIS	APPROVED FOR CONSTRUCTION BY <u>Daniel Oberle</u>	DATE 01/22/17	PROJECT RFD75
QSAT REVIEW 06/06/16	DATE 06/15/16	SHEET	

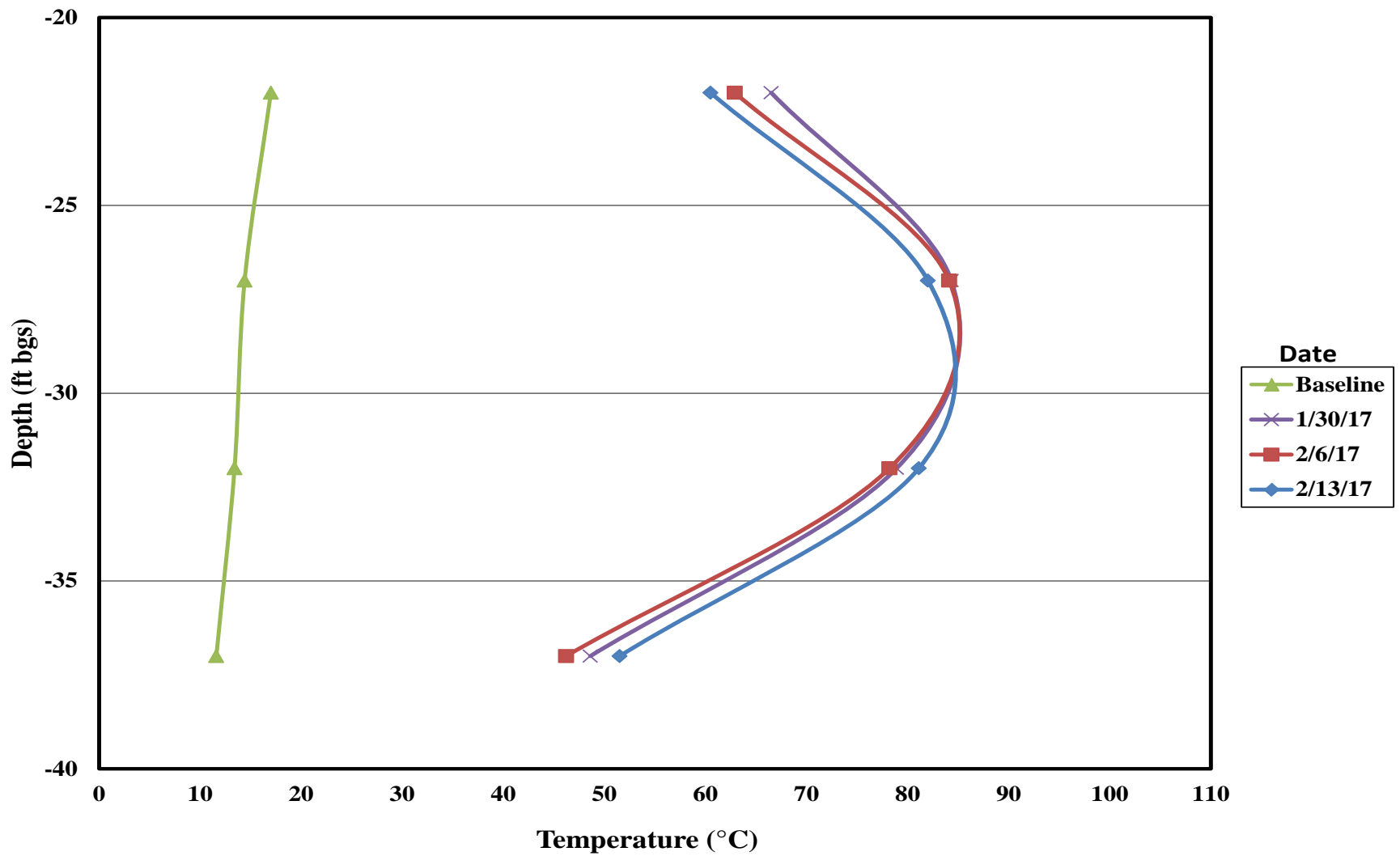
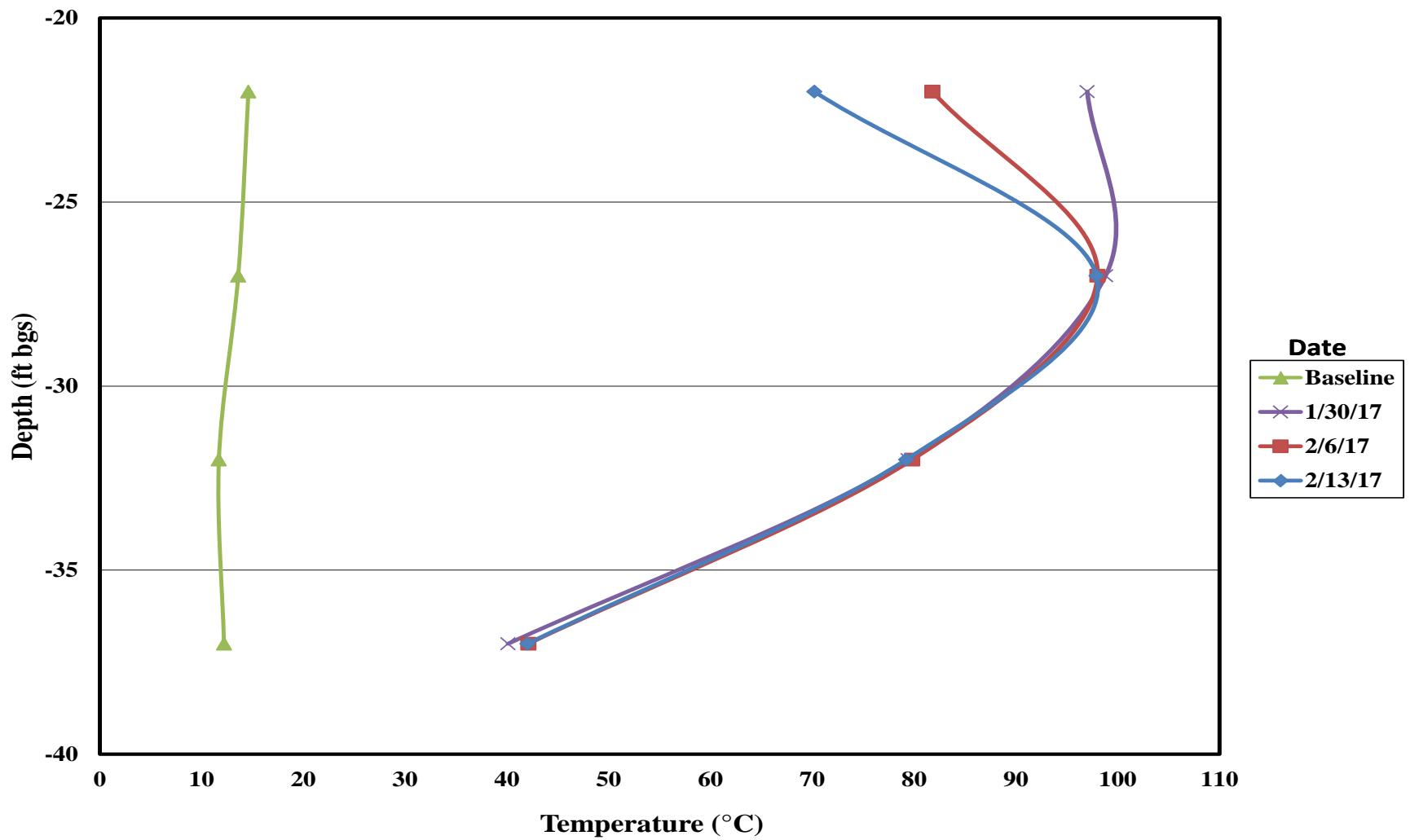


Figure 2a. TMP D3 Temperature vs. Depth



**Figure 2b.** TMP F4 Temperature vs. Depth

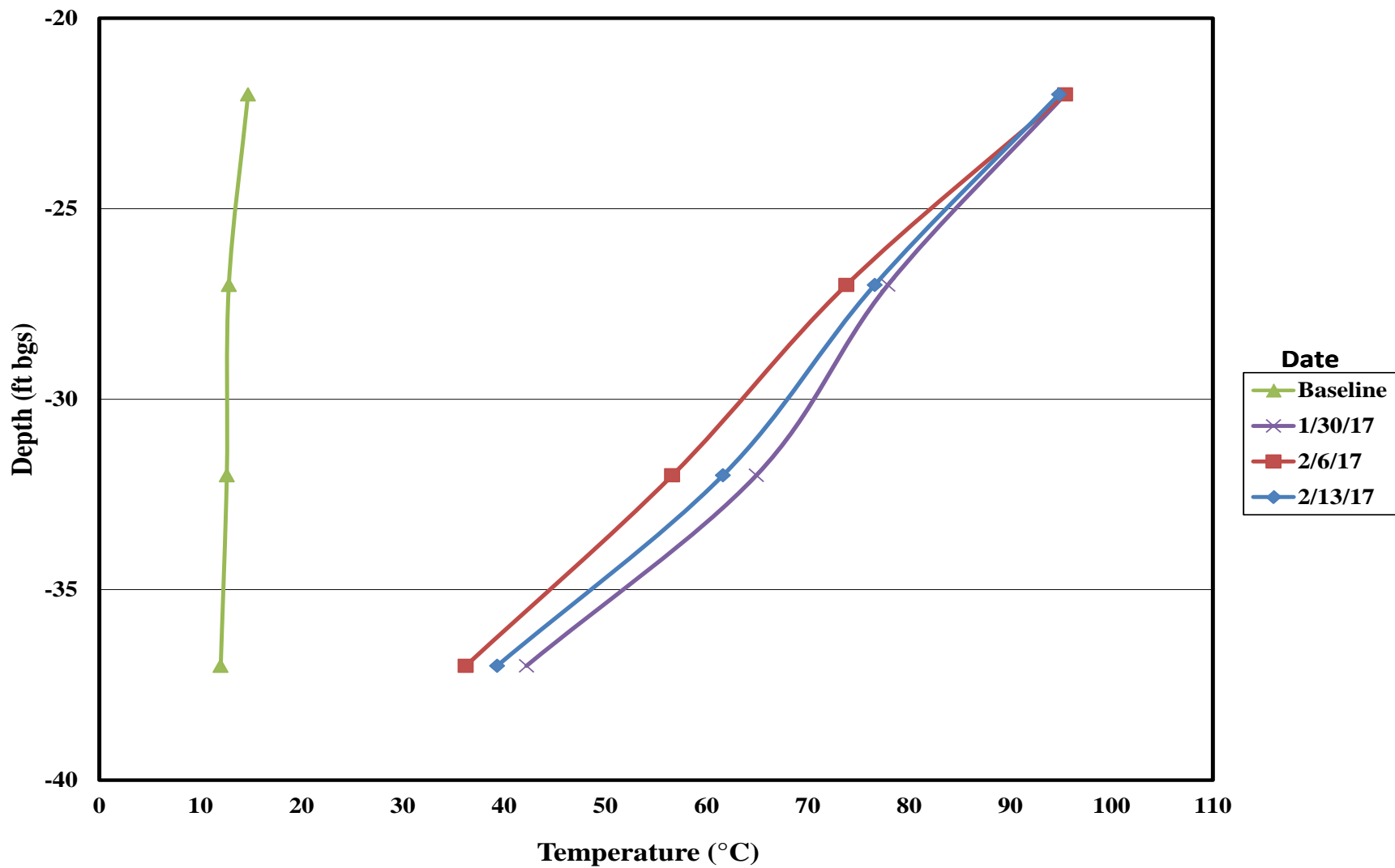


Figure 2c. TMP H3 Temperature vs. Depth



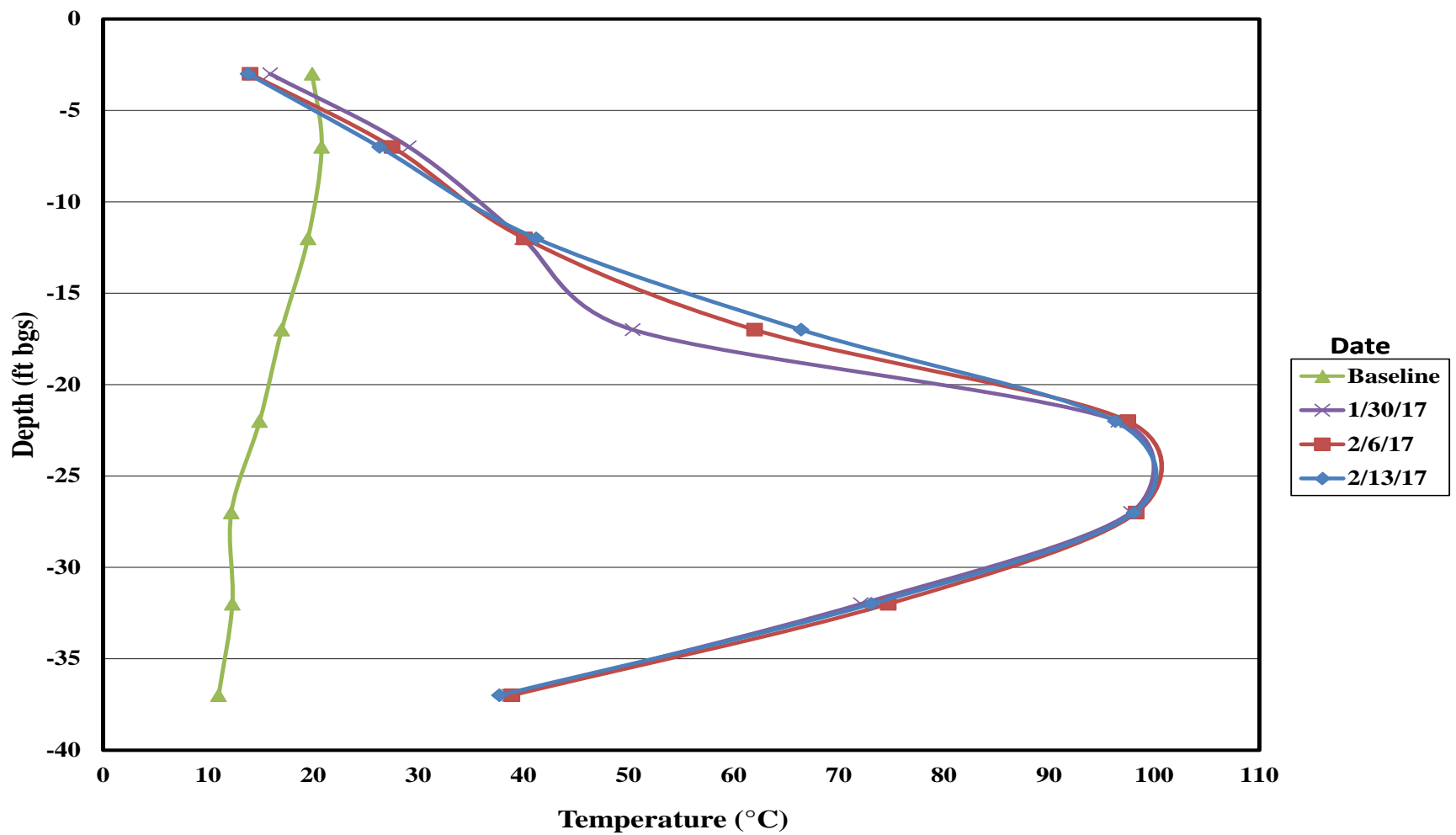


Figure 2d. TMP K4 Temperature vs. Depth

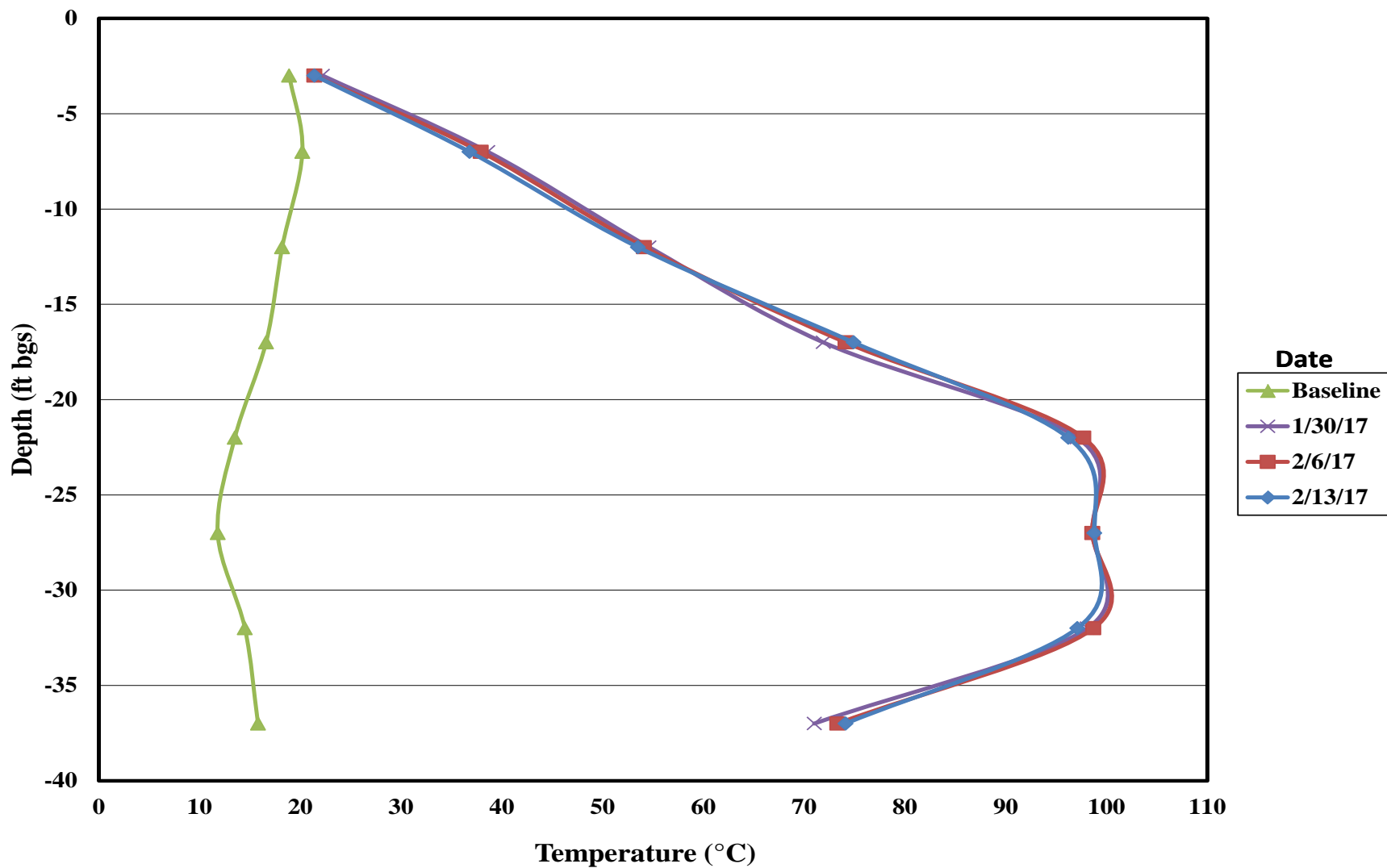
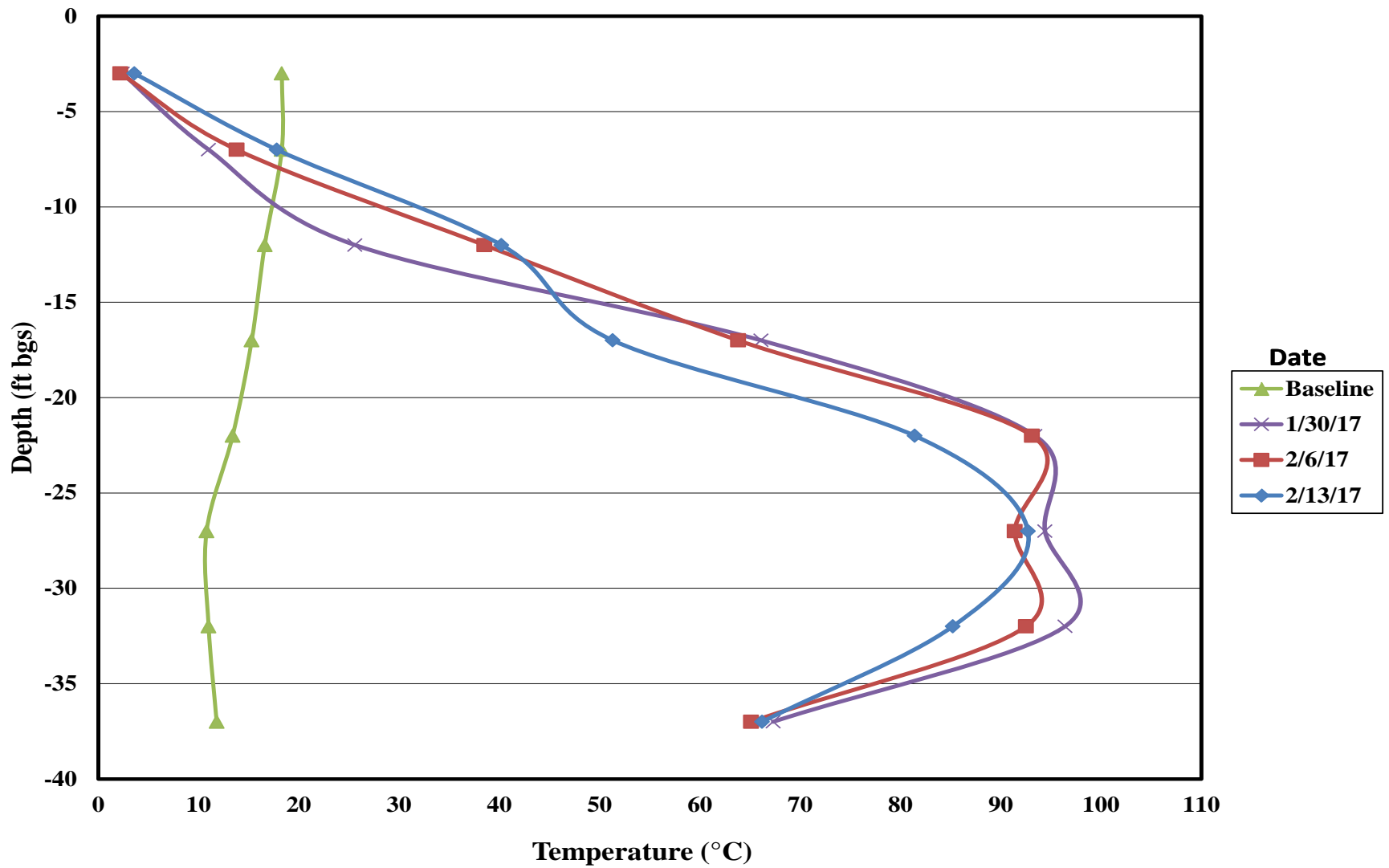


Figure 2e. TMP K5 Temperature vs. Depth



**Figure 2f.** TMP K7 (SS8) Temperature vs. Depth

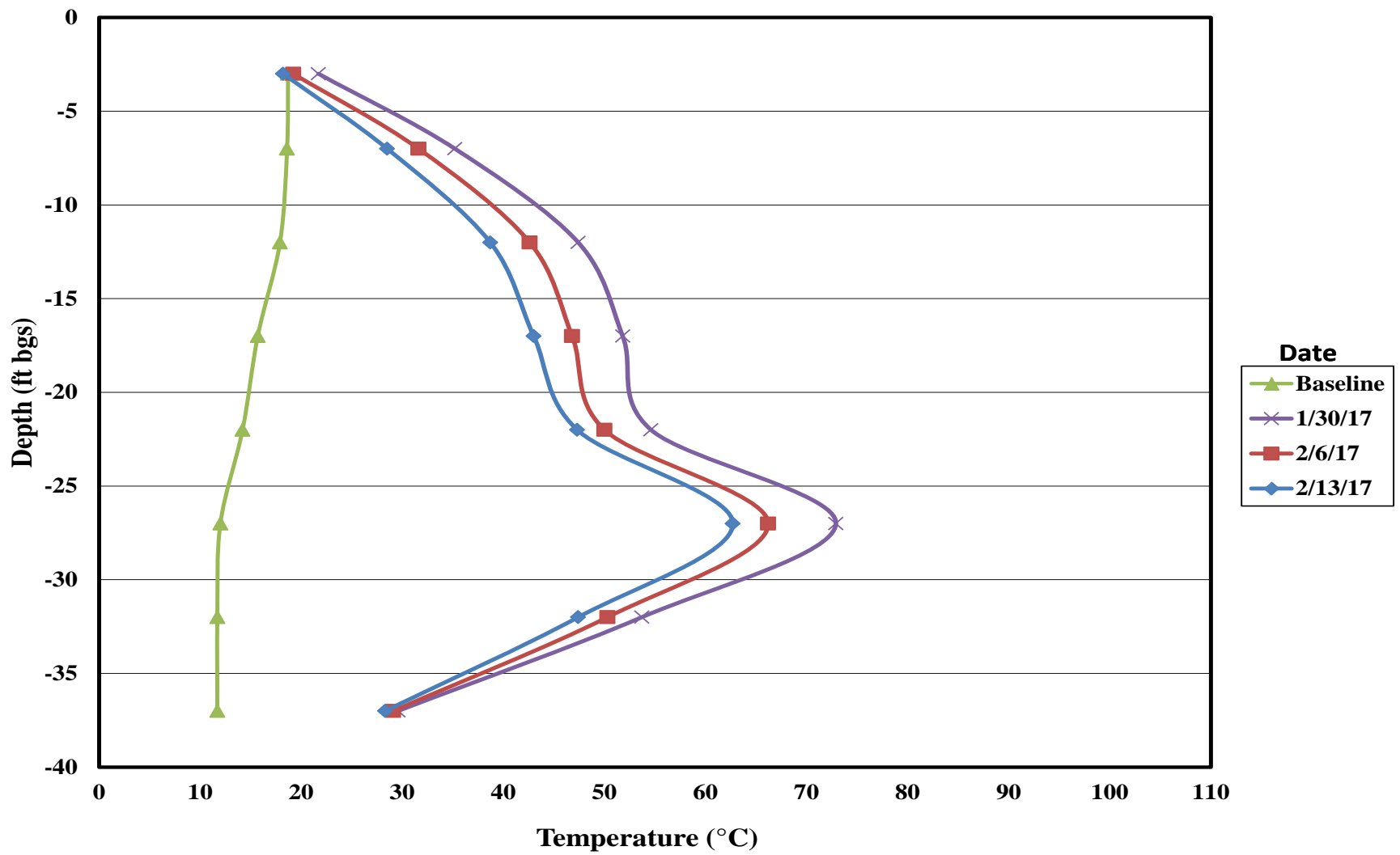
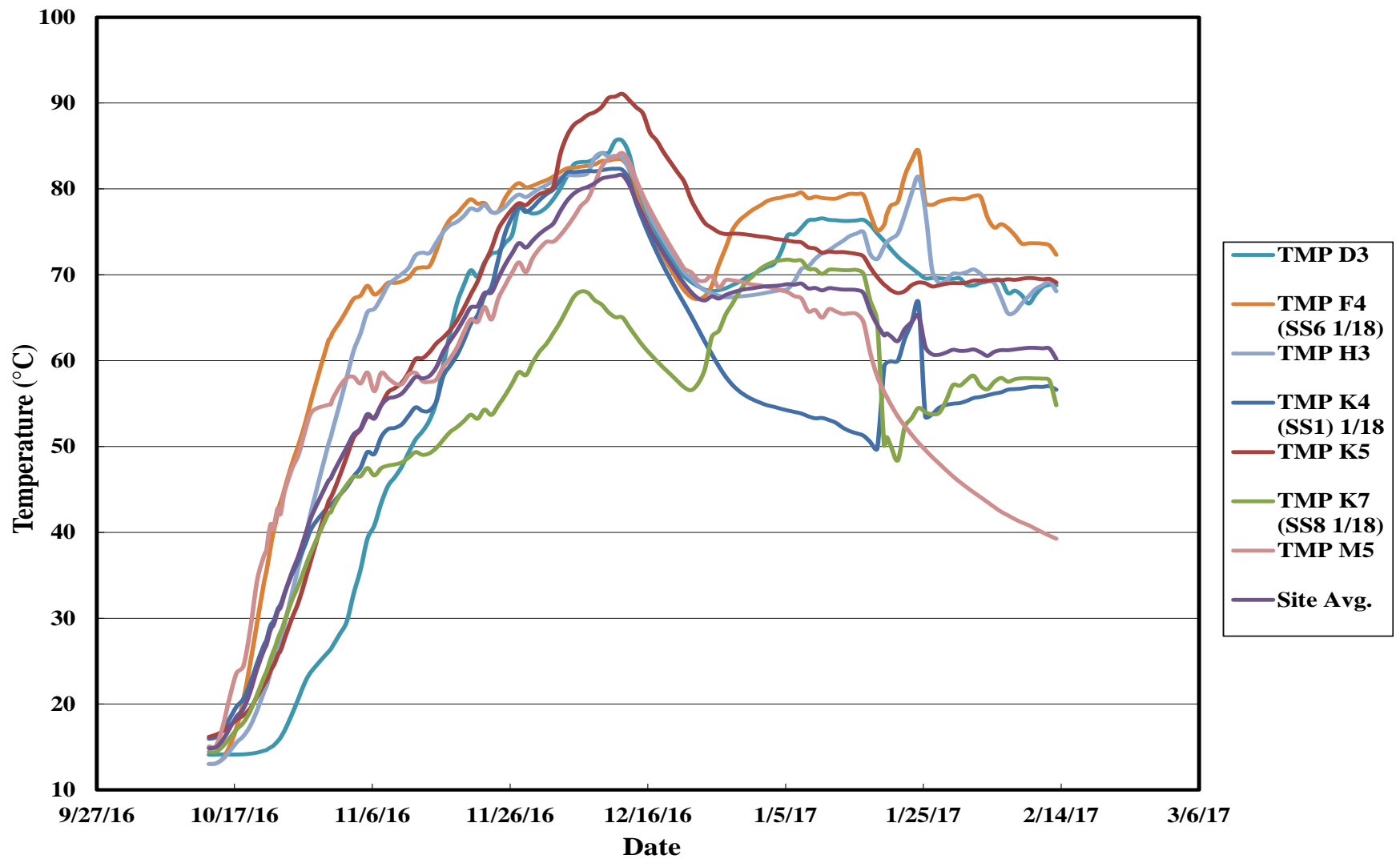


Figure 2g. TMP M5 Temperature vs. Depth



**Figure 3.** Subsurface Temperatures vs. Time



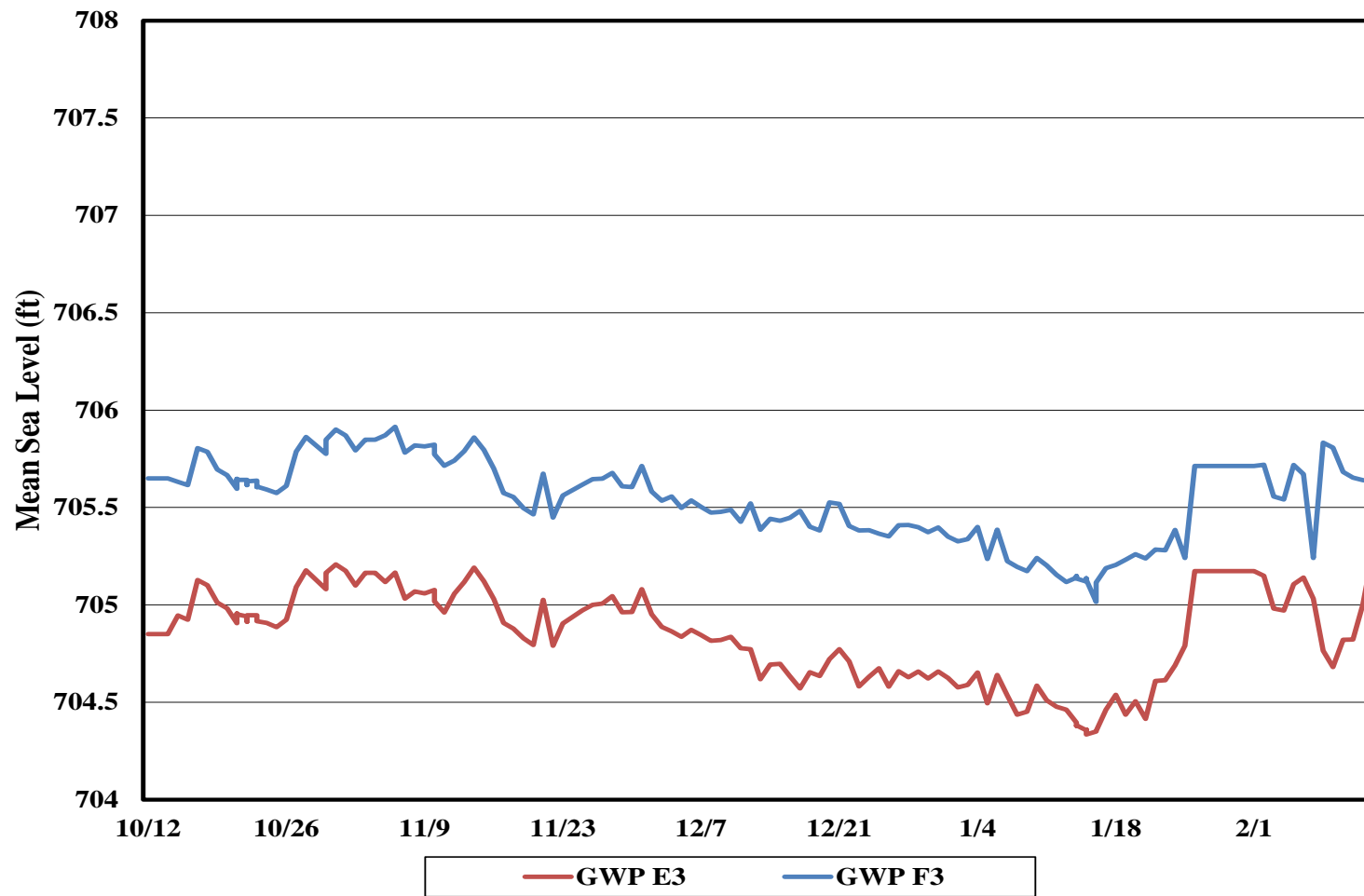
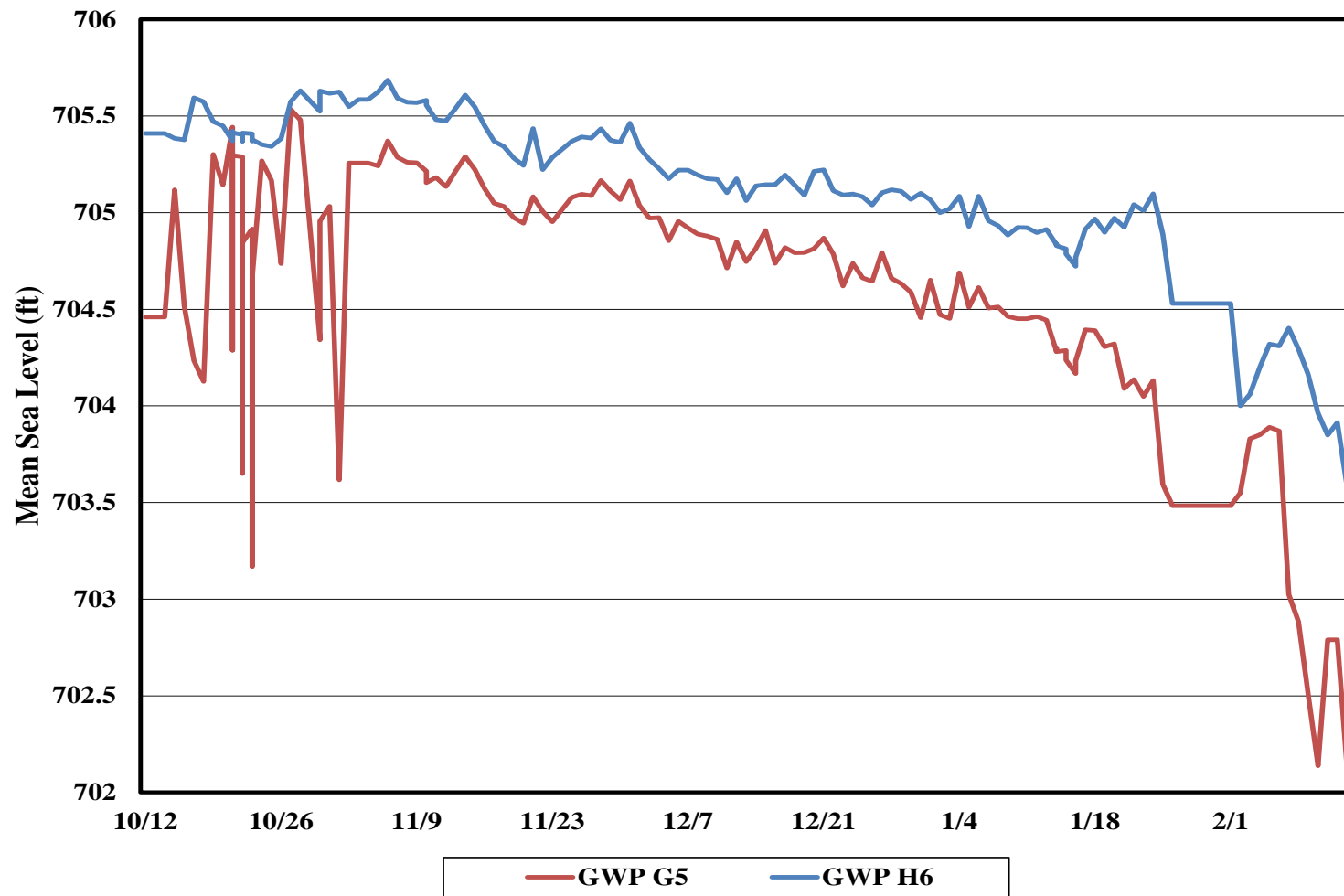
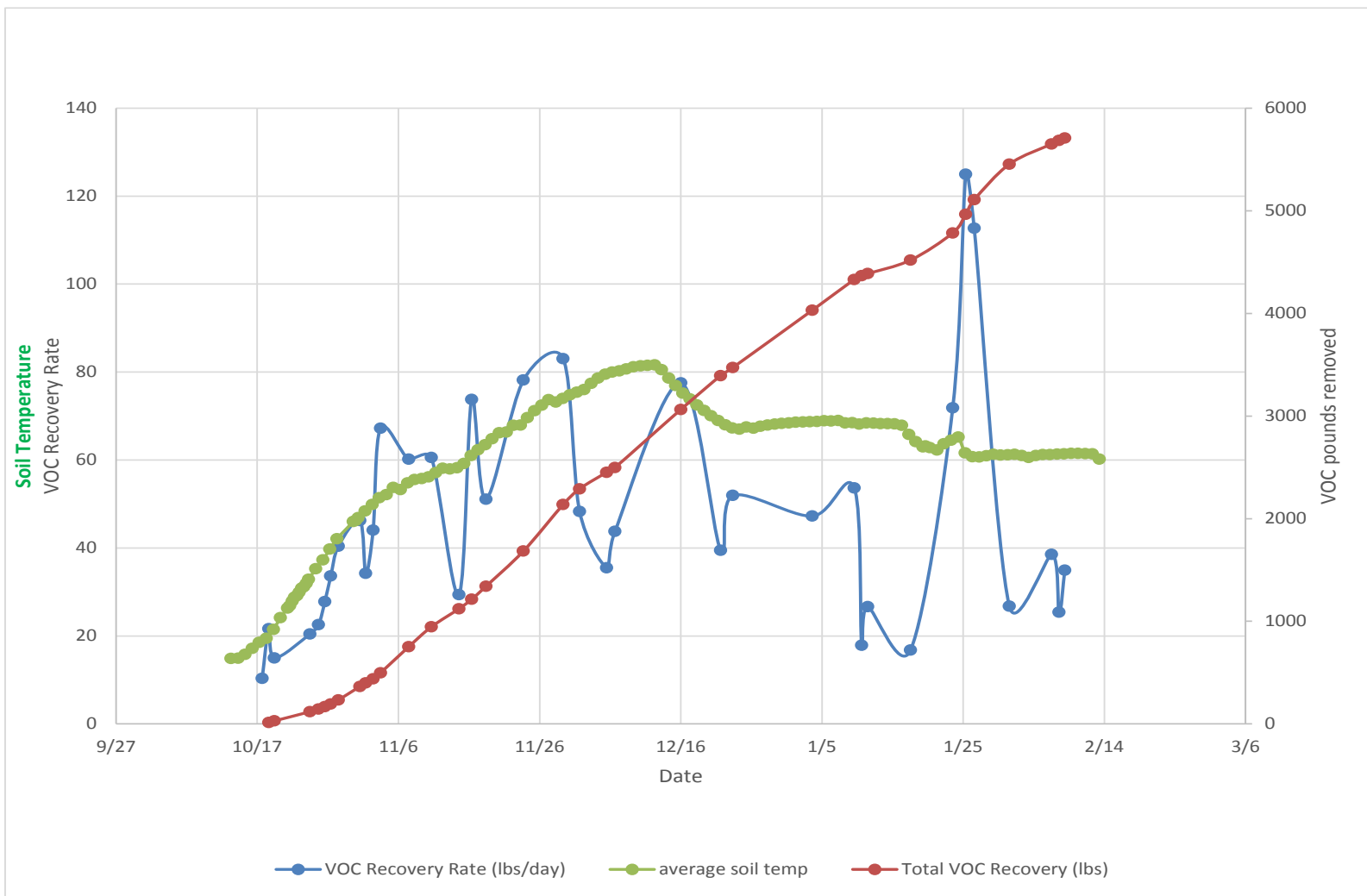


Figure 4a. GWP E3 and GWP F3



**Figure 4b.** GWP G5 and GWP H6



**Figure 5. ERH Performance**

## Appendix C

### Construction Permit

## City of Rockford, Illinois

Public Works Department  
Engineering Division  
425 East State Street, Rockford, IL 61104  
Phone: 779-348-7174 Fax: (815) 967-7058  
Web: [www.rockfordil.gov](http://www.rockfordil.gov)

RECEIVED MAR 11 2016



W-00

BOND  
received 3/23/16

## RIGHT-OF-WAY PERMIT APPLICATION

(Permit applies but is not limited to the following activities within the City right-of-way: tunnel, bore, excavate, dig, lane closures, sidewalk closures etc.)

3 / 11 / 16  
(DATE OF APPLICATION)

PERMIT FEE : \$35.00

(FEE WAIVED FOR PUBLIC UTILITIES)

TKS GROW INC

(APPLICANT NAME - PLEASE PRINT)

☐ UTILITY ☒ CONTRACTOR ☐ CONSULTANT ☐ PROPERTY OWNER  
(APPLICANT IS - CHECK ONE BOX)

(IF BUILT BY A CONTRACTOR GIVE NAME &amp; ATTACH PROOF OF BOND AND INSURANCE)

(CONTRACTOR ADDRESS - PLEASE PRINT)

PO Box 737 Logview, WA 98032  
(APPLICANT ADDRESS)

(ADDRESS)

847-376-3691  
(PHONE)847-635-5868  
(FAX)

(PHONE)

(FAX)

Drilling of 14 wells into Marshall St. then trench pipes & cables to the wells  
(DESCRIPTION OF WORK - EXAMPLES: BURY 125' OF 4" GAS MAIN; ACCESS MANHOLE; INSTALL SEWER/WATER SERVICE; LANE CLOSURE; ETC.)

2630 MARSHALL ST

(LOCATION OF WORK - STREET NUMBER &amp; STREET NAME)

☒ PAVEMENT ☐ ALLEY ☐ SIDEWALK ☐ TERRACE ☐ CURB

Harrison + Alton

(WORK IS LOCATED BETWEEN THESE TWO CROSS STREETS)

IF IN PAVEMENT WHAT TYPE: ☐ CONCRETE ☒ ASPHALT ☐ BRICK

5/16

THRU

6/10

7 a.m. - 6 p.m.  
(REQUESTED DATES FOR WORK)ARE ANY PAVEMENT CUTS REQUIRED? ☒ YES ☐ NO

IF YES IS LOCATION ON 5 YEAR ROAD MORATORIUM?

☒ YES ☐ NO

(NOTE: IF PAVEMENT CUT IS AUTHORIZED AT LOCATION LISTED ON 5 YEAR ROAD MORATORIUM, FULL LANE RESTORATION WILL BE REQUIRED.)

The above applicant requests permission to excavate and/or occupy the public right-of-way in the City of Rockford and agrees to indemnify, hold harmless, and defend the City of Rockford, its officers, agents, and employees, from any and all claims resulting from injuries, including death, damages or losses, including, but not limited to the general public, which may arise or which may be alleged to have arisen out of, or in connection with such excavation and occupancy. I hereby agree to perform the work in accordance with the provisions, specifications and requirements of all of the following:

- Chapter 26, as revised, of the City of Rockford, Code of Ordinance.
- IDOT's Standard Specifications for Road and Bridge Construction, as revised.
- The Standard Specifications for Water and Sewer Construction in Illinois, as revised.
- Traffic control shall always be provided by the applicant or contractor and will be in accordance with the Illinois Manual on Uniform Traffic Control Devices for Streets and Highways, as revised. A traffic control plan and standard details may be required based on the Engineer's or designee's discretion. 48 hours notice is required for closures.
- Accessibility requirements shall be in accordance with the Illinois Accessibility Code and a current IDOT Standard shall be submitted with the application when applicable.
- Erosion & sediment control shall be in accordance with all requirements set forth in the current revision of the General NPDES Permit No. ILR10. Stabilization measures must be initiated within seven (7) days after construction activities have temporarily or permanently ceased.
- All other federal, state, and local requirements as they may apply.

## THE FOLLOWING ITEMS ARE TO BE SUBMITTED WITH THE APPLICATION:

- CERTIFICATE OF INSURANCE - \$3,000,000 per occurrence, City of Rockford listed as additional insured, and valid through the permit period.
- CERTIFICATE OF BOND - \$50,000 limit, acceptable forms are Right-of-Way and License & Permit, City of Rockford listed as Obligor, and valid through the permit period.
- PROJECT DESCRIPTION - including site plan / drawings and schedule for all activities taking place in the public right-of-way including dimensions of pavement cuts.
- TRAFFIC CONTROL PLAN - Any closure of streets or sidewalks shall require a traffic control plan to be submitted.

(AUTHORIZED REPRESENTATIVE SIGNATURE)

(AUTHORIZED REPRESENTATIVE PRINTED NAME)

## FOR INTERNAL USE ONLY

APPROVED BY:

APPROVAL  
DATE:

START DATE:

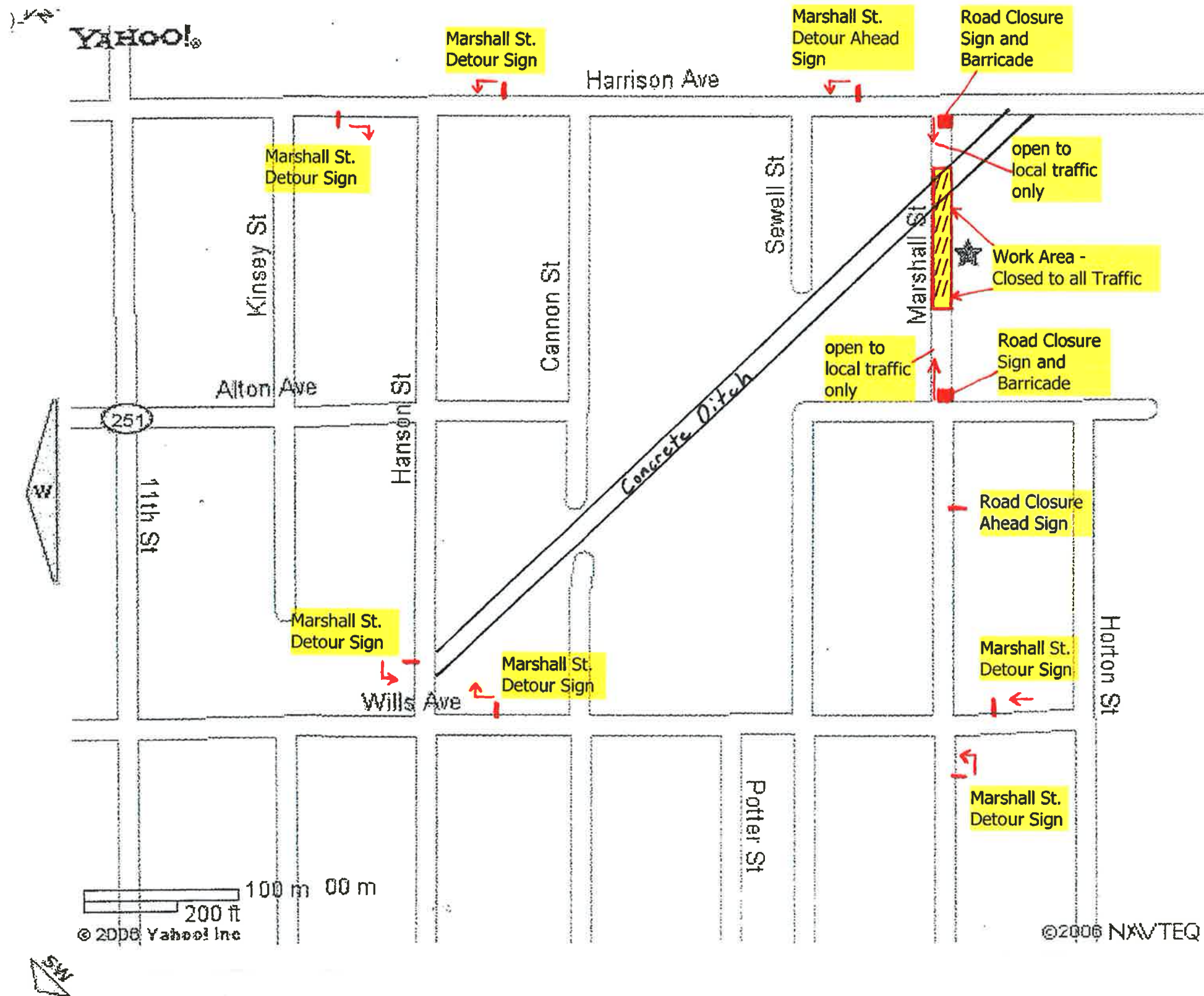
PERMIT FEE:

EXPIRES:

PERMIT #:

(PAY CODE - 10101000-61403)





**Marshall Street Closure Traffic Plan**

## Appendix D

### Data Validation Reports

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION V  
SUPERFUND DIVISION

DATE:

SUBJECT: Review of Data  
Received for Review on: January 6, 2017

FROM: Timothy Prendiville, Supervisor (SR-6J)  
Superfund Contract Management Section

TO: Data User: CDM Smith  
Email Address: grabsjc@cdm.com

**Electronic and Manual Validation for Region 5**

We have reviewed the data for the following case:

SITE Name: Southeast Rockford Ground Water Contamination ( IL )

Case No: 46716

SDG No: E3Y20

Number and Type of Samples: 11 Soils (Low/Medium Volatiles)

Sample Numbers: E3Y20 – E3Y30

Laboratory: CHM

Hrs for Review:

Following are our findings:

CC: Howard Pham  
Region 5 TPO  
Mail Code: SA-5J

**Below is a summary of the out-of-control audits and the possible effects on the data for this case:**

Eleven (11) soil samples labeled E3Y20 through E3Y30 were shipped to Chemtech Consulting Group (CHM) located in Mountainside, NJ. The samples were collected December 13-15, 2016 and received December 15-16, 2016 intact with a cooler temperature within the preferred range of 0-6 °C.

Ten samples; E3Y20 thru E3Y26 and E3Y28 thru E3Y30, were analyzed for the low level volatile target analytes. One sample, E3Y27, was analyzed for medium level volatile target analytes. All samples were analyzed by CLP SOW SOM02.3 (09/2015) and reviewed according to the September 2016 NFG for SOM02.3 [EPA-540-R-2016-002] and the ESAT5 Data Review/Validation of CLP Organic Data SOP.

Sample E3Y27 was designated by the samplers to be used for the MS/MSD analyses.

No samples were identified as either trip blanks or field blanks. Sample E3Y30 was identified as a field duplicate of sample E3Y22.

### **1. PRESERVATION AND HOLDING TIMES**

No problems found.

### **2. GAS CHROMATOGRAPH/MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK**

No problems found.

### **3. INITIAL CALIBRATION**

The following low/medium volatile samples are associated with an initial calibration in which a DMC did not meet percent relative standard deviation (%RSD) criteria. Detects are not qualified. Nondetects are not qualified.

E3Y28, VBLK84  
Vinyl chloride-d<sub>3</sub>

E3Y20, E3Y21, E3Y22, E3Y23, E3Y24, E3Y24RE, E3Y25, E3Y26, E3Y26RE,  
E3Y28, E3Y29, E3Y30, VBLK84, VBLK87, VBLK88, VBLK89, VHBLK01  
trans-1,3-Dichloropropene-d<sub>4</sub>

The following low/medium level volatile samples are associated with an initial calibration in which a DMC did not meet relative response factor (RRF) criteria. Detects are not qualified. Nondetects are not qualified.

E3Y20, E3Y21, E3Y22, E3Y23, E3Y24, E3Y24RE, E3Y25, E3Y26, E3Y26RE,  
E3Y28, E3Y29, E3Y30, VBLK84, VBLK87, VBLK88, VBLK89, VHBLK01  
trans-1,3-Dichloropropene-d<sub>4</sub>

### **4. CONTINUING CALIBRATION**

The following low/medium level volatile samples are associated with an opening and/or closing CCV with DMC RRF exceeding criteria. Detects are not qualified. Nondetects are not qualified.

E3Y20, E3Y21, E3Y22, E3Y23, E3Y24, E3Y24RE, E3Y25, E3Y26, E3Y26RE,  
E3Y28, E3Y29, E3Y30, VBLK24, VBLK87, VBLK88, VBLK89, VHBLK01  
trans-1,3-Dichloropropene-d<sub>4</sub>

### **5. BLANKS**

The following low/medium volatile samples have analyte results reported greater than the CRQL but greater than the blank result. The associated method blank results are greater than or equal to CRQLs. Detects are qualified U. Sample results have been reported at 2x CRQLs. Results from sample E3Y26 were not used to generate the Final EXES Sample Summary Report.



E3Y26

Methylene chloride

The following low/medium volatile samples have analyte results reported greater than the CRQL but less than the blank result. The associated method blank results are greater than or equal to CRQLs. Detects are qualified U. Sample results have been reported as the CRQLs.

VHBLK01

Methylene chloride

The following low/medium volatile samples have analyte results reported less than CRQLs. The associated method blank results are greater than or equal to CRQLs. Detects are qualified U. Sample results have been reported at CRQLs. Some nondetects are ultimately qualified UJ due to out-of-range DMC and/or IS recoveries.

E3Y22, E3Y23, E3Y24RE, E3Y28, E3Y29, E3Y30

Methylene chloride

The following low/medium volatile samples have analyte results reported less than CRQLs. The associated method blank results are less than CRQLs. Detects are qualified U. Sample results have been reported at CRQLs. Results from sample E3Y24 were not used to generate the Final EXES Sample Summary Report. Some nondetects are ultimately qualified UJ due to out-of-range DMC and/or IS recoveries.

E3Y20, E3Y21, E3Y24, E3Y25, E3Y26RE

Methylene chloride

## 6. DEUTERATED MONITORING COMPOUNDS / SURROGATES

The following low/medium volatile samples have DMC/surrogate percent recoveries greater than the primary maximum criteria. Detects are qualified as estimated J+. Nondetects are not qualified. Results from samples E3Y24 and E3Y26 were not used to generate the Final EXES Sample Summary Report.

E3Y24, E3Y26

Cyclohexane, Methylcyclohexane, 1,2-Dichloropropane, Bromodichloromethane, 4-Methyl-2-pentanone, 2-Hexanone

E3Y25

Cyclohexane, Trichloroethene, Methylcyclohexane, 1,2-Dichloropropane, Bromodichloromethane, 4-Methyl-2-pentanone, Toluene, Tetrachloroethene, 2-Hexanone, Ethylbenzene, o-Xylene, m,p-Xylene, Styrene, Isopropylbenzene, 1,1,2,2-Tetrachloroethane, 1,2-Dibromo-3-chloropropane

## E3Y27

Chlorobenzene, 1,1,2,2-Tetrachloroethane, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 1,2-Dichlorobenzene, 1,2-Dibromo-3-chloropropane, 1,2,4-Trichlorobenzene, 1,2,3-Trichlorobenzene

## E3Y27MS

Cyclohexane, Methylcyclohexane, 1,2-Dichloropropane, Bromodichloromethane, 4-Methyl-2-pentanone, 2-Hexanone, Chlorobenzene, 1,1,2,2-Tetrachloroethane, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 1,2-Dichlorobenzene, 1,2-Dibromo-3-chloropropane, 1,2,4-Trichlorobenzene, 1,2,3-Trichlorobenzene

## E3Y27MSD

Cyclohexane, Methylcyclohexane, 1,2-Dichloropropane, Bromodichloromethane, Chlorobenzene, 1,1,2,2-Tetrachloroethane, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 1,2-Dichlorobenzene, 1,2-Dibromo-3-chloropropane, 1,2,4-Trichlorobenzene, 1,2,3-Trichlorobenzene

The following low/medium volatile samples have DMC/surrogate percent recoveries less than the primary minimum criteria but greater than or equal to the expanded minimum criteria. The analytes were not detected in the samples. Nondetects are qualified as estimated UJ.

## E3Y21

Trichlorofluoromethane, 1,1-Dichloroethene, 1,1,2-Trichloro-1,2,2-trifluoroethane, Methyl acetate, Methylene chloride, trans-1,2-Dichloroethene, Methyl tert-butyl ether, cis-1,2-Dichloroethene, 1,1,1-Trichloroethane, Carbon tetrachloride, 1,2-Dichloroethane, 1,2-Dibromoethane, Chlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 1,2-Dichlorobenzene, 1,2,4-Trichlorobenzene, 1,2,3-Trichlorobenzene

## E3Y23

1,1-Dichloroethene, trans-1,2-Dichloroethene, cis-1,2-Dichloroethene, Chlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 1,2-Dichlorobenzene, 1,2,4-Trichlorobenzene, 1,2,3-Trichlorobenzene

## E3Y25, E3Y29

Chlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 1,2-Dichlorobenzene, 1,2,4-Trichlorobenzene, 1,2,3-Trichlorobenzene

## E3Y28

Trichlorofluoromethane, 1,1,2-Trichloro-1,2,2-trifluoroethane, Methyl acetate, Methylene chloride, Methyl tert-butyl ether, 1,1,1-Trichloroethane, Carbon tetrachloride, 1,2-Dichloroethane, 1,2-Dibromoethane, Chlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 1,2-Dichlorobenzene, 1,2,4-Trichlorobenzene, 1,2,3-Trichlorobenzene

The following low/medium volatile samples have DMC/surrogate percent recoveries less than the expanded minimum criteria. The analytes were not detected in the samples. Nondetects are qualified as unusable R.

E3Y23, E3Y29

1,1,2,2-Tetrachloroethane, 1,2-Dibromo-3-chloropropane

## **7. MATRIX SPIKE/MATRIX SPIKE DUPLICATE**

Sample E3Y27 was designated by the samplers to be used for the MS/MSD analyses.

No problems found.

## **8. FLORISIL CARTRIDGE PERFORMANCE CHECK**

Not Applicable.

## **9. CLEANUP PROCEDURES**

Not Applicable.

## **10. LABORATORY CONTROL SAMPLE**

Not Applicable.

## **11. INTERNAL STANDARD**

The following low/medium volatile samples have internal standard area responses greater than or equal to expanded minimum (20%) criteria and less than primary minimum (50%) criteria. Detects are qualified as estimated J+. Nondetects are qualified as estimated UJ. Results from samples E3Y24 and E3Y26 were not used to generate the Final EXES Sample Summary Report.

E3Y24, E3Y24RE, E3Y26RE

Bromoform, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 1,2-Dichlorobenzene,  
1,2-Dibromo-3-chloropropane, 1,2,4-Trichlorobenzene, 1,2,3-Trichlorobenzene

E3Y26

1,1,1-Trichloroethane, Cyclohexane, Carbon tetrachloride, Benzene, Trichloroethene,  
Methylcyclohexane, 1,2-Dichloropropane, Bromodichloromethane,  
cis-1,3-Dichloropropene, 4-Methyl-2-pentanone, Toluene, trans-1,3-Dichloropropene,  
1,1,2-Trichloroethane, Tetrachloroethene, 2-Hexanone, Dibromochloromethane,  
1,2-Dibromoethane, Chlorobenzene, Ethylbenzene, m,p-Xylene, o-Xylene, Styrene,  
Isopropylbenzene, 1,1,2,2-Tetrachloroethane

The following low/medium volatile samples have internal standard area response less than expanded minimum (20%) criteria. Detects are qualified as estimated J+. Nondetects are qualified as unusable R. Results from sample E3Y26 were not used to generate the Final EXES Sample Summary Report.

E3Y26

Bromoform, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 1,2-Dichlorobenzene,  
1,2-Dibromo-3-chloropropane, 1,2,4-Trichlorobenzene, 1,2,3-Trichlorobenzene

## **12. TARGET ANALYTE IDENTIFICATION**

All the soil samples had percent solids within the preferred range of 30-100%.

## **13. REPORTED CONTRACT QUANTITATION LIMIT**

The following low/medium volatile samples have analyte results greater than or equal to detection limit (MDL) and below quantitation limit (CRQL). Detects are qualified as estimated J.

E3Y22

2-Butanone, o-Xylene, m,p-Xylene

E3Y23

2-Butanone, Tetrachloroethene, Ethylbenzene

E3Y24, E3Y24RE, E3Y26, E3Y26RE

2-Butanone

E3Y25

Acetone, Trichloroethene

E3Y27

Isopropylbenzene

E3Y27MS

Tetrachloroethene, Isopropylbenzene

E3Y27MSD

Tetrachloroethene, Ethylbenzene, Isopropylbenzene

E3Y29

Acetone, 2-Butanone, Toluene

E3Y30

2-Butanone, Toluene, m,p-Xylene

VBLK87

Methylene chloride

**14. TENTATIVELY IDENTIFIED COMPOUNDS**

Sample results are identified in the separate Data Validation Report titled 'Tentatively Identified Compounds'. The manually reviewed report is titled '46716.E3Y20.TIC.rtf'.

**15. SYSTEM PERFORMANCE**

No problems found.

**16. FIELD QC SAMPLES**

No samples were identified as either trip blanks or field blanks. Sample E3Y30 was identified as a field duplicate of sample E3Y22. Sample results and RPDs are summarized in the following table:

CLP Sample Number:	<b>E3Y22</b>	<b>E3Y30</b>	
Sample Identifier:	A4-GP11A-161215	A4-GP11A-161215-D	
Station Location:	A4-GP11	A4-GP11	
Collection Date/Time:	12/15/2016 09:35	12/15/2016 09:35	RPDs
Units:	µg/Kg	µg/Kg	%
Percent solids:	95.1	95.6	
Target Analytes			
Acetone	24	19	23.3
2-Butanone	8	5.3	40.6
Toluene	8.5	2.2	118
o-Xylene	1.2		200
m,p-Xylene	1.9	1.3	37.5
No. of TICs	17	14	

ND = Not Detected.

**17. OVERALL ASSESSMENT**

Manual integrations were reviewed and found to be acceptable. Both before and after snapshots of the chromatograms were provided.

The Laboratory's SDG Narrative incorrectly reported the receipt temperature for sample E3Y20 as 22 °C. Careful review of the Chain-of-Custody Record shows that the actual temperature recorded is 2.2 °C.

The following low/medium volatile samples reported a semivolatile TAL as a volatile TIC



Case No: 46716

Site Name: Southeast Rockford Ground Water Contamination (IL)

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SDG No: E3Y20

Laboratory: CHM

E3Y22

CAS No. 91-57-6     2-Methylnaphthalene

E3Y26

CAS No. 100-52-7     Benzaldehyde

The following low/medium volatile samples reported atypical 'alkanes' improperly reported on the Form 1B-OR [Organic Analysis Data Sheet Tentatively Identified Compounds]. The compounds were removed from the EXES TIC Report and changed to non-reportable on the EXES Sample Summary Report. Copies of the chemical formula and molecular structure are provided for verification.

E3Y26RE

CAS No. 589-90-2

Cyclohexane, 1,4-dimethyl-

CAS No. 1678-93-9

Cyclohexane, butyl-

CAS No. 4413-21-2

Cyclopentane, 1,1-ethylidenebis-

CAS No. 61142-37-8

Cyclohexane, (1,2-dimethylbutyl)

E3Y27

CAS No. 6165-44-2

Cyclohexane, 1,1 (1,4-butanediyl)

Reviewed by: Allison C Harvey / Techlaw-ESAT

Date: February 1, 2017

## Validation Data Qualifier Sheet

<u>Qualifiers</u>	<u>Data Qualifier Definitions</u>
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the results may be biased high.
J-	The result is an estimated quantity, but the results may be biased low.
NJ	The analyte has been “tentatively identified” or “presumptively” as present and the associated numerical value is the estimated concentration in the sample.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
C	The target Pesticide or Aroclor analyte identification has been confirmed by Gas Chromatograph/Mass Spectrometer (GC/MS).
X	The target Pesticide or Aroclor analyte identification was not confirmed when GC/MS analysis was performed.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION V  
SUPERFUND DIVISION

DATE:

SUBJECT: Review of Data  
Received for Review on: February 2, 2017

FROM: Timothy Prendiville, Supervisor (SR-6J)  
Superfund Contract Management Section

TO: Data User: CDM Smith  
Email Address: grabsjc@cdm.com

**Electronic and Manual Validation for Region 5**

We have reviewed the data for the following case:

SITE Name: Southeast Rockford Ground Water Contamination ( IL )

Case No: 46759

SDG No: E3Y31

Number and Type of Samples: 8 Soils (Low/Medium Volatiles)

Sample Numbers: E3Y31 – E3Y38

Laboratory: CHM

Hrs for Review:

Following are our findings:

CC: Howard Pham  
Region 5 TPO  
Mail Code: SA-5J

**Below is a summary of the out-of-control audits and the possible effects on the data for this case:**

Eight (8) soil samples labeled E3Y31 through E3Y38 were shipped to Chemtech Consulting Group (CHM) located in Mountainside, NJ. The samples were collected January 16-17, 2017 and received January 17-18, 2017 intact and properly cooled.

Two samples; E3Y31 and E3Y32 were analyzed for the low level volatile target analytes. Six samples, E3Y33 through E3Y38, were analyzed for medium level volatile target analytes. All samples were analyzed by CLP SOW SOM02.3 (09/2015) and reviewed according to the September 2016 NFG for SOM02.3 [EPA-540-R-2016-002] and the ESAT5 Data Review/Validation of CLP Organic Data SOP.

Sample E3Y34 was designated by the samplers to be used for the MS/MSD analyses.

No samples were identified as either trip blanks or field blanks. Sample E3Y36 was identified as a field duplicate of sample E3Y35.

## **1. PRESERVATION AND HOLDING TIMES**

No problems found.

## **2. GAS CHROMATOGRAPH/MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK**

No problems found.

## **3. INITIAL CALIBRATION**

The following low level volatile samples are associated with an initial calibration percent relative standard deviation (%RSD) outside criteria. The analytes were not detected in the samples. Nondetects are not qualified.

E3Y31, E3Y32, VBLK98, VBLK99, VHBLK01  
o-Xylene

The following low level volatile samples are associated with an initial calibration in which a DMC did not meet relative response factor (RRF) criteria. Detects are not qualified. Nondetects are not qualified.

E3Y31, E3Y32, VBLK98, VBLK99, VHBLK01  
trans-1,3-Dichloropropene-d<sub>4</sub>

## **4. CONTINUING CALIBRATION**

The following low level volatile samples are associated with an opening and/or closing CCV with DMC RRF exceeding criteria. Detects are not qualified. Nondetects are not qualified.

E3Y31, E3Y32, VBLK98, VBLK99, VHBLK01  
trans-1,3-Dichloropropene-d<sub>4</sub>

## **5. BLANKS**

The following low level volatile samples have analyte results reported less than CRQLs. The associated method blank results are less than CRQLs. Detects are qualified U. Sample results have been reported at CRQLs.

E3Y31, E3Y32, VHBLK01  
Methylene chloride



## **6. DEUTERATED MONITORING COMPOUNDS / SURROGATES**

The following low/medium volatile samples have DMC/surrogate percent recoveries greater than the primary maximum criteria. The analytes were not detected in the samples. Nondetects are not qualified.

E3Y31, E3Y32

1,1,2,2-Tetrachloroethane, 1,2-Dibromo-3-chloropropane

E3Y33

Acetone, 2-Butanone

The following low/medium volatile samples have DMC/surrogate percent recoveries less than the primary minimum criteria but greater than or equal to the expanded minimum criteria. The analytes were not detected in the sample. Nondetects are qualified as estimated UJ.

E3Y32

Chlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 1,2-Dichlorobenzene,  
1,2,4-Trichlorobenzene, 1,2,3-Trichlorobenzene

## **7. MATRIX SPIKE/MATRIX SPIKE DUPLICATE**

Sample E3Y34 was designated by the samplers to be used for the MS/MSD analyses.

No problems found.

## **8. FLORISIL CARTRIDGE PERFORMANCE CHECK**

Not Applicable.

## **9. CLEANUP PROCEDURES**

Not Applicable.

## **10. LABORATORY CONTROL SAMPLE**

Not Applicable.

## **11. INTERNAL STANDARD**

The following low/medium volatile samples have internal standard area response greater than maximum criteria. The analytes were not detected in the sample. Nondetects are not qualified.

E3Y32

Bromoform, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 1,2-Dichlorobenzene,  
1,2-Dibromo-3-chloropropane, 1,2,4-Trichlorobenzene, 1,2,3-Trichlorobenzene

## **12. TARGET ANALYTE IDENTIFICATION**

All the soil samples had percent solids within the preferred range of 30-100%.

## **13. REPORTED CONTRACT QUANTITATION LIMIT**

The following low/medium volatile samples have analyte results greater than or equal to detection limit (MDL) and below quantitation limit (CRQL). Detects are qualified as estimated J.

E3Y31, E3Y32

Acetone

E3Y33

Isopropylbenzene

E3Y34, E3Y34MS, E3Y34MSD

o-Xylene, m,p-Xylene

E3Y35

Methylcyclohexane, Tetrachloroethene, Isopropylbenzene

E3Y36

Methylcyclohexane, Tetrachloroethene

E3Y38

Methylcyclohexane

VBK98, VBK99

Methylene chloride

## **14. TENTATIVELY IDENTIFIED COMPOUNDS**

Sample results are identified in the separate Data Validation Report titled 'Tentatively Identified Compounds'. The manually reviewed report is titled '46759.E3Y31.TIC.rtf'.

## **15. SYSTEM PERFORMANCE**

No problems found.

**16. FIELD QC SAMPLES**

No samples were identified as either trip blanks or field blanks. Sample E3Y36 was identified as a field duplicate of sample E3Y35. Sample results and RPDs are summarized in the following table:

CLP Sample Number:	<b>E3Y35</b>	<b>E3Y36</b>	
Sample Identifier:	A4-GP06A-170117	A4-GP06A-170117-D	
Station Location:	A4-GP06	A4-GP06	
Collection Date/Time:	1/17/2017 08:55	1/17/2017 08:55	RPDs
Units:	µg/Kg	µg/Kg	%
Percent solids:	87.3	87.5	
Target Analytes			
Methylcyclohexane	72	83	14.2
Tetrachloroethene	220	250	12.8
Ethylbenzene	460	510	10.3
o-Xylene	1200	1400	15.4
m,p-Xylene	2200	2600	16.7
Isopropylbenzene	280	330	16.4
No. of TICs	25	24	

ND = Not Detected.

**17. OVERALL ASSESSMENT**

Manual integrations were reviewed and found to be acceptable. Both before and after snapshots of the chromatograms were provided.

EXES reported the MS/MSD spiking compounds at 50% of the concentration reported by the laboratory on the Form 3s. The laboratory reported the spiking concentration as 2600 µg/kg which is comparable to the SOW nominal spiking solution of 2500 µg/Kg added to a 5.0 gram sample for the medium level soil samples. EXES calculations are based on a spiking solution of 1300 µg/Kg. Therefore recoveries were calculated around 200% or greater. The Reviewer used the concentrations reported by the laboratory for the validation of this package.

## Validation Data Qualifier Sheet

<u>Qualifiers</u>	<u>Data Qualifier Definitions</u>
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the results may be biased high.
J-	The result is an estimated quantity, but the results may be biased low.
NJ	The analyte has been “tentatively identified” or “presumptively” as present and the associated numerical value is the estimated concentration in the sample.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
C	The target Pesticide or Aroclor analyte identification has been confirmed by Gas Chromatograph/Mass Spectrometer (GC/MS).
X	The target Pesticide or Aroclor analyte identification was not confirmed when GC/MS analysis was performed.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION V  
SUPERFUND DIVISION

DATE:

SUBJECT: Review of Data  
Received for Review on: March 10, 2017

FROM: Timothy Prendiville, Supervisor (SR-6J)  
Superfund Contract Management Section

TO: Data User: CDM Smith  
Email Address: grabsjc@cdm.com

**Electronic and Manual Validation for Region 5**

We have reviewed the data for the following case:

SITE Name: Southeast Rockford Ground Water Contamination ( IL )

Case No: 46759

SDG No: E3Y39

Number and Type of Samples: 4 Soils (Low/Medium Volatiles)

Sample Numbers: E3Y39 – E3Y42

Laboratory: CHM

Hrs for Review:

Following are our findings:

CC: Howard Pham  
Region 5 TPO  
Mail Code: SA-5J



Case No: 46759

Site Name: Southeast Rockford Ground Water Contamination (IL)

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SDG No: E3Y39

Laboratory: CHM

**Below is a summary of the out-of-control audits and the possible effects on the data for this case:**

Four (4) soil samples labeled E3Y39 through E3Y42 were shipped to Chemtech Consulting Group (CHM) located in Mountainside, NJ. The samples were collected February 16, 2017 and received February 17, 2017 intact and properly cooled.

All samples were analyzed for the low level volatile target analytes by CLP SOW SOM02.3 (09/2015) and reviewed according to the September 2016 NFG for SOM02.3 [EPA-540-R-2016-002] and the ESAT5 Data Review/Validation of CLP Organic Data SOP.

Sample E3Y39 was designated by the samplers to be used for the MS/MSD analyses.

No samples were identified as either trip blanks or field blanks. Sample E3Y41 was identified as a field duplicate of sample E3Y40.

### **1. PRESERVATION AND HOLDING TIMES**

No problems found.

### **2. GAS CHROMATOGRAPH/MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK**

No problems found.

### **3. INITIAL CALIBRATION**

The following low level volatile samples are associated with an initial calibration percent relative standard deviation (%RSD) outside criteria. The analyte was not detected in the samples. Nondetects are not qualified. Only the sample results from E3Y42RE are reported in the EXES final summary as E3Y42.

E3Y39, E3Y39MS, E3Y39MSD, E3Y40, E3Y41, E3Y42, E3Y42RE, VBLK76,  
VBLK77, VBLK78, VHBLK01  
o-Xylene

The following low level volatile samples are associated with an initial calibration in which a DMC did not meet relative response factor (RRF) criteria. Detects are not qualified. Nondetects are not qualified.

E3Y39, E3Y39MS, E3Y39MSD, E3Y41, E3Y40, E3Y42, E3Y42RE, VBLK76,  
VBLK77, VBLK78, VHBLK01  
trans-1,3-Dichloropropene-d<sub>4</sub>

### **4. CONTINUING CALIBRATION**

The following low level volatile samples are associated with an opening and/or closing CCV with DMC RRF exceeding criteria. Detects are not qualified. Nondetects are not qualified. Only the sample results from E3Y42RE are reported in the EXES final summary as E3Y42.

E3Y39, E3Y39MS, E3Y39MSD, E3Y41, E3Y40, E3Y42, E3Y42RE, VBLK76,  
VBLK77, VBLK78, VHBLK01  
trans-1,3-Dichloropropene-d<sub>4</sub>

E3Y39, E3Y39MS, E3Y39MSD, E3Y41, E3Y42, E3Y42RE, VBLK76  
1,1-Dichloroethene-d<sub>2</sub>

## 5. BLANKS

The following low level volatile samples have analyte results reported less than CRQLs. The associated method blank results are less than CRQLs. Detects are qualified U. Sample results have been reported at CRQLs. Only the sample results from E3Y42RE are reported in the EXES final summary as E3Y42.

VHBLK01

Acetone

E3Y39, E3Y39MS, E3Y39MSD, E3Y40, E3Y41, E3Y42, E3Y42RE

Methylene chloride

## 6. DEUTERATED MONITORING COMPOUNDS / SURROGATES

The following low/medium volatile samples have DMC/surrogate percent recoveries greater than the primary maximum criteria. These analytes were not detected in the samples. Nondetects are not qualified. Only the sample results from E3Y42RE are reported in the EXES final summary as E3Y42.

E3Y39

1,1,2,2-Tetrachloroethane, 1,2-Dibromo-3-chloropropane

E3Y39MS, E3Y39MSD, E3Y41

4-Methyl-2-pentanone, 2-Hexanone, 1,1,2,2-Tetrachloroethane,  
1,2-Dibromo-3-chloropropane

E3Y40

Cyclohexane, Methylcyclohexane, 1,2-Dichloropropane, Bromodichloromethane,  
1,1,2,2-Tetrachloroethane, 1,2-Dibromo-3-chloropropane

E3Y42

Cyclohexane, Benzene, Methylcyclohexane, 1,2-Dichloropropane,  
Bromodichloromethane, cis-1,3-Dichloropropene, 4-Methyl-2-pentanone,  
trans-1,3-Dichloropropene, 1,1,2-Trichloroethane, 2-Hexanone, Chlorobenzene,  
1,1,2,2-Tetrachloroethane, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene,  
1,2-Dichlorobenzene, 1,2-Dibromo-3-chloropropane, 1,2,4-Trichlorobenzene,  
1,2,3-Trichlorobenzene

E3Y42RE

Cyclohexane, Methylcyclohexane, 1,2-Dichloropropane, Bromodichloromethane,  
cis-1,3-Dichloropropene, 4-Methyl-2-pentanone, trans-1,3-Dichloropropene,  
1,1,2-Trichloroethane, 2-Hexanone, Chlorobenzene, 1,1,2,2-Tetrachloroethane,  
1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 1,2-Dichlorobenzene,  
1,2-Dibromo-3-chloropropane, 1,2,4-Trichlorobenzene, 1,2,3-Trichlorobenzene

The following low/medium volatile samples have DMC/surrogate percent recoveries less than the primary minimum criteria but greater than or equal to the expanded minimum criteria. The detects are qualified as estimated J-. Nondetects are qualified as estimated UJ.

E3Y39, E3Y39MS, E3Y39MSD

Chlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 1,2-Dichlorobenzene,  
1,2,4-Trichlorobenzene, 1,2,3-Trichlorobenzene

E3Y41

1,1-Dichloroethene, trans-1,2-Dichloroethene, cis-1,2-Dichloroethene

#### **7. MATRIX SPIKE/MATRIX SPIKE DUPLICATE**

Sample E3Y39 was designated by the samplers to be used for the MS/MSD analyses.

No problems found.

#### **8. FLORISIL CARTRIDGE PERFORMANCE CHECK**

Not Applicable.

#### **9. CLEANUP PROCEDURES**

Not Applicable.

#### **10. LABORATORY CONTROL SAMPLE**

Not Applicable.

#### **11. INTERNAL STANDARD**

No problems found.

#### **12. TARGET ANALYTE IDENTIFICATION**

All the soil samples had percent solids within the preferred range of 30-100%.

#### **13. REPORTED CONTRACT QUANTITATION LIMIT**

The following low/medium volatile samples have analyte results greater than or equal to detection limit (MDL) and below quantitation limit (CRQL). Detects are qualified as estimated J.

E3Y39, E3Y39MS, VBLK78

Acetone

VBLK76, VBLK77, VHBLK01  
Methylene chloride

#### 14. TENTATIVELY IDENTIFIED COMPOUNDS

Sample results are identified in the separate Data Validation Report titled 'Tentatively Identified Compounds'. The manually reviewed report is titled '46759.E3Y39.TIC.rtf'.

#### 15. SYSTEM PERFORMANCE

No problems found.

#### 16. FIELD QC SAMPLES

No samples were identified as either trip blanks or field blanks. Sample E3Y41 was identified as a field duplicate of sample E3Y40. Sample results and RPDs are summarized in the following table:

CLP Sample Number:	<b>E3Y40</b>	<b>E3Y41</b>	
Sample Identifier:	A4-GP06A-170216	A4-GP06A-170216-D	
Station Location:	A4-GP06	A4-GP06	
Collection Date/Time:	2/16/2017 13:00	2/16/2017 13:00	RPDs
Units:	µg/Kg	µg/Kg	%
Percent solids:	88.2	88.9	
Target Analytes			
Acetone	17	ND	200
Total Alkanes	15970	8830	
No. of TICs	18	16	

ND = Not Detected.

#### 17. OVERALL ASSESSMENT

Manual integrations were reviewed and found to be acceptable. Both before and after snapshots of the chromatograms were provided.

Only the sample results from E3Y42RE are reported in the EXES final summary as E3Y42.



## Validation Data Qualifier Sheet

<u>Qualifiers</u>	<u>Data Qualifier Definitions</u>
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the results may be biased high.
J-	The result is an estimated quantity, but the results may be biased low.
NJ	The analyte has been “tentatively identified” or “presumptively” as present and the associated numerical value is the estimated concentration in the sample.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
C	The target Pesticide or Aroclor analyte identification has been confirmed by Gas Chromatograph/Mass Spectrometer (GC/MS).
X	The target Pesticide or Aroclor analyte identification was not confirmed when GC/MS analysis was performed.

**SE Rockford Area 4 ERH Sampling  
Data Evaluation Worksheet  
Level 4 Validation**

<b>Sample Delivery Group (SDG) Number:</b>	16120484
<b>Laboratory:</b>	STAT Analysis Corporation
<b>Matrix:</b>	Soils
<b>Collection date:</b>	December 14, 2016
<b>Analysis/Methods:</b>	Volatile Organic Compounds - Method SW8260

**Samples in SDGs:**

Sample ID		
A4-GP14A-161214	16120484-001	
A4-GP14B-161214	16120484-002	1:50 methanol
A4-GP13A-161214	16120484-003	
A4-GP13B-161214	16120484-004	

Validation was performed in accordance with the method and the EPA Organic National Functional Guidelines January 2017

The soils were collected with Encore samplers. All soils were analyzed either directly with the exception of A4-GP14B-161214, as noted above, which was analyzed from the methanol dilution due to the presence of diesel range hydrocarbons. (This information is from observing the chromatograms in the TRS sample analysis from Test America. Data from this package did not include chromatograms, the narrative states there was matrix interference.)

**Volatile Organic Compounds Method 8260**

**Precision:**

Were the Field Duplicate relative percent differences (RPD)  $\leq$  50%?

**Yes No N/A**

N/A

Were the Matrix Spike Duplicate RPDs  $\leq$  30%?

N/A

Were the Laboratory Control Spike Duplicate RPD  $\leq$  30%?

Yes

Comments (note deviations):

See SDG ID 16120511 for field duplicate and matrix spike data

**LCS / LCSD**

**LCS / LCSD % RPD**

**Qualifier**

**Associated Sample**

Acceptable

**Accuracy:**

Were the Matrix Spike/Matrix Spike Duplicates recoveries within control limits?

**Yes No N/A**

N/A

Were the Laboratory Control Sample recoveries within control limits?

No

Were the Laboratory Method Blank results all < reporting limit?

No

Were the Trip Blanks/Field Blanks results all < reporting limit?

N/A

Was the ICAL criteria met?

No

Was the CCV criteria met?

No

Were the Tuning criteria met?

Yes

Were the Surrogate % recoveries within laboratory determined control limits?

Yes

Were the Internal Standard areas within  $\pm$  50 - 150%?

No

Comments (note deviations):

**General**

Base reporting limit is 5 ug/kg. In the field, approximately 5 grams of soil are added to 5 ml of methanol. The laboratory takes 100 ul of this extract into 5ml of water for analysis. This calculates to a 50x. A 10ul sample size would have been used for a 500x dilution.

A 1x indicates no additional dilutions were performed. The soil samples were collected in field preserved method 5035 kits, so the entire contents of one preserved vial were purged

Sample results are reported to the reporting limits. Results between the MDL and RL, which would be estimated (J) have not been reported.

**Calibration**

ICAL		%RSD	Criteria (%)	Qualifier	Associated Sample
	Methylene Chloride	47.46	30	J**	All samples
CCV		%D	Criteria (%)	Qualifier	Associated Sample
	Acetone	-24.1	20	J/UJ	All samples
	Methylene Chloride	23.1	20	J/UJ	All samples
	Carbon Disulfide	-48.7	20	J/UJ	All samples

\*\*No qualification required - qualification required for detected results only, sample results nondetect.

**Matrix Spikes**

Matrix Spikes were not performed on the samples in this SDG - MS/MSD performed on samples in batch 16120511

**Blanks**

Method Blank	Concentration (ug/kg)	PQL (ug/kg)	Qualifier	Associated Sample
1,1,2,2-tetrachloroethane	0.26	5	None	Sample results nondetect
2-hexanone	1.26	20	None	Sample results nondetect
bromoform	2.7	5	None	Sample results nondetect
ethylbenzene	0.17	5	None	Sample results nondetect
tetrachloroethene	0.38	5.7	None	Sample results equal to PQL

**LCS / LCSD**

	LCS / LCSD % recovery	limits	Qualifier	Associated Sample
carbon disulfide	137 / 137	70 - 130	None	Sample results nondetect

Internal Standards	Area	Area Lower / Upper Limit	Qualifiers	Associated Samples
1,4-Dichlorobenzene-d4*	1,085,448	1,193,991 / 4,775,962	J+ / UJ	A4-GP-13B-161214

\*Associated analyte 1,1,2,2-Tetrachloroethane

**Representativeness:**

Were sampling procedures and design criteria met?  
 Were holding times met?  
 Were preservation criteria met? (0 °C ± 6 °C)  
 Were Chain-of-Custody records complete and provided in data package?  
 Comments (note deviations):  
 Cooler temperature was 4.2 °C

Yes	No	N/A
Yes		
Yes		
Yes		
Yes		

**Completeness (90%):**

Are all data in this SDG useable?  
 Comments (note deviations):

Yes	No	N/A
Yes		

**Sensitivity:**

Are MDLs present and reported?  
 Comments (note deviations):

Yes	No	N/A
Yes		

Data Validator:

Kim Zilis

Data Reviewer:

*Kristine Molloy*

Date: 12/22/2016

*7/12/2017*

**SE Rockford Area 4 ERH Sampling  
Data Evaluation Worksheet  
Level 4 Validation**

**Sample Delivery Group (SDG) Number:** 16120511  
**Laboratory:** STAT Analysis Corporation  
**Matrix:** Soils  
**Collection date:** December 15, 2016  
**Analysis/Methods:** Volatile Organic Compounds - Method SW8260

**Samples in SDGs:**

Sample ID		
A4-GP11A-161215	16120511-001	
A4-GP11B-161215	16120511-002	
A4-GP12A-161215	16120511-003	
A4-GP09A-161215	16120511-004	
A4-GP08A-161215	16120511-005	1:50 methanol
A4-GP08A-161215D	16120511-006	1:50 methanol
A4-GP01A-161215	16120511-007	1:50 methanol

Validation was performed in accordance with the method and the EPA Organic National Functional Guidelines January 2017

The soils were collected with Encore samplers. All soils were analyzed either directly with the exception of the samples noted above, which were analyzed from the methanol dilution due to the presence of diesel range hydrocarbons. (This information is from observing the chromatograms in the TRS sample analysis from Test America. Data from this package did not include chromatograms, the narrative states there was matrix interference.)

**Volatile Organic Compounds Method 8260**

**Precision:**

Were the Field Duplicate relative percent differences (RPD)  $\leq$  50%?  
 Were the Matrix Spike Duplicate RPDs  $\leq$  30%?  
 Were the Laboratory Control Spike Duplicate RPD  $\leq$  30%?  
 Comments (note deviations):

Yes No N/A

N/A

Yes

Yes

Field duplicates were not collected.

**Matrix Spikes**

% RPD	Limits
Acceptable	

**LCS/LCSD**

% RPD	Limits
Acceptable	

**Accuracy:**

Were the Matrix Spike/Matrix Spike Duplicates recoveries within control limits?  
 Were the Laboratory Control Sample recoveries within control limits?  
 Were the Laboratory Method Blank results all < reporting limit?  
 Were the Trip Blanks/Field Blanks results all < reporting limit?  
 Was the ICAL criteria met?  
 Was the CCV criteria met?  
 Were the Tuning criteria met?  
 Were the Surrogate % recoveries within laboratory determined control limits?  
 Were the Internal Standard areas within  $\pm$  50 - 150%?

Yes No N/A

N/A

Yes

Yes

No

No

No

Yes

Yes

Yes

Comments (note deviations):

**General**

Base reporting limit is 5 ug/kg. In the field, approximately 5 grams of soil are added to 5 ml of methanol. The laboratory takes 100 ul of this extract into 5ml of water for analysis. This calculates to a 50x. A 10ul sample size would have been used for a 500x dilution.

A 1x indicates no additional dilutions were performed. The soil samples were collected in field preserved method 5035 kits, so the entire contents of one preserved vial were purged

Sample results are reported to the reporting limits. Results between the MDL and RL, which would be estimated (J) have not been reported.

**Calibration**

ICAL		%RSD	Criteria (%)	Qualifier	Associated Sample
	Methylene Chloride	47.46	30	J**	All samples
CCV		%D	Criteria (%)	Qualifier	Associated Sample
	Methylene Chloride	39.8	20	J/UJ	All samples
	2-Hexanone	-24.3	20	J/UJ	All samples

\*\*No qualification required - qualification required for detected results only, sample results nondetect.

**LCS/LCSD**

**% Recovery**  
Acceptable  
**Limits**

**Matrix Spikes**

The surrogate 4-Bromofluorobenzene was below criteria in both the Matrix spike and matrix spike duplicate, at 58 and 56.1% with a lower limit of 58%. The BFB surrogate was recovered at 71% in the unspiked sample.

**MS/MSD**

	% Recovery	Limits	Qualifier	Associated Sample
Bromoform	65.5 / 57.3	70-130	J/UJ	A4-GP12A-161215
Carbon Tetrachloride	67.6 / 75.1	70-130	J/UJ	A4-GP12A-161215
Chlorobenzene	69.7 / 57.7	70-130	J/UJ	A4-GP12A-161215
Ethylbenzene	68.5 / 56.7	70-130	J/UJ	A4-GP12A-161215
Styrene	54.5 / 50.2	70-130	J/UJ	A4-GP12A-161215
Toluene	64 / 64.7	70-130	J/UJ	A4-GP12A-161215
Xylenes, Total	76 / 68.4	70-130	J/UJ	A4-GP12A-161215
1,1,2,2-Tetrachloroethane	1500 / 1710	70-130	J**	A4-GP12A-161215

\*\*No qualification required - qualification required for detected results only, sample results nondetect.

**Blanks****MethodBlank**

No target compounds reported

**Representativeness:**

Were sampling procedures and design criteria met?  
Were holding times met?  
Were preservation criteria met? (0 °C ± 6 °C)  
Were Chain-of-Custody records complete and provided in data package?  
Comments (note deviations):

Cooler temperature was 3.5 °C

Yes No N/A

Yes  
Yes  
Yes  
Yes

**Completeness (90%):**

Are all data in this SDG useable?  
Comments (note deviations):

Yes No N/A

Yes

**Sensitivity:**

Are MDLs present and reported?  
Comments (note deviations):

Yes No N/A

Yes

Data Validator:

Kim Zilis

Date: 12/22/2016

Data Reviewer:

*Kristine Molloy*

*7/13/2017*



**SE Rockford Area 4 ERH Sampling  
Data Evaluation Worksheet  
Level 4 Validation**

**Sample Delivery Group (SDG) Number:** 17010423  
**Laboratory:** STAT Analysis Corporation  
**Matrix:** Soils  
**Collection date:** January 16, 2017  
**Analysis/Methods:** Volatile Organic Compounds - Method SW8260

**Samples in SDGs:**

Sample ID		
A4-GP15L-170116	17010423-001	
A4-GP15L-170116D	17010423-002	
A4-GP03A-170116	17010423-003	1:50 methanol
A4-GP09A-170116	17010423-004	

Validation was performed in accordance with the method and the EPA Organic National Functional Guidelines January 2017

The soils were collected with Encore samplers. All soils were analyzed either directly with the exception of A4-GP03A-170116, as noted above, which was analyzed from the methanol dilution due to the presence of diesel range hydrocarbons. (This information is from observing the chromatograms in the TRS sample analysis from Test America. Data from this package did not include chromatograms, the narrative states there was matrix interference.)

**Volatile Organic Compounds Method 8260**

**Precision:**

Were the Field Duplicate relative percent differences (RPD)  $\leq$  50%?  
 Were the Matrix Spike Duplicate RPDs  $\leq$  30%?  
 Were the Laboratory Control Spike Duplicate RPD  $\leq$  30%?  
 Comments (note deviations):

**Yes No N/A**

No  
N/A  
Yes

**Accuracy:**

Were the Matrix Spike/Matrix Spike Duplicates recoveries within control limits?  
 Were the Laboratory Control Sample recoveries within control limits?  
 Were the Laboratory Method Blank results all < reporting limit?  
 Were the Trip Blanks/Field Blanks results all < reporting limit?  
 Was the ICAL criteria met ?  
 Was the CCV criteria met?  
 Were the Tuning criteria met?  
 Were the Surrogate % recoveries within laboratory determined control limits?  
 Were the Internal Standard areas within  $\pm$  50 - 150%?  
 Comments (note deviations):

**Yes No N/A**

N/A  
Yes  
No  
Yes  
Yes  
Yes  
No  
No

**General**

Base reporting limit is 5 ug/kg. In the field, approximately 5 grams of soil are added to 5 ml of methanol. The laboratory takes 100 ul of this extract into 5ml of water for analysis. This calculates to a 50x.

A 1x indicates no additional dilutions were performed. The soil samples were collected in field preserved method 5035 kits, so the entire contents of one preserved vial were purged

**Surrogate recovery**

Surrogate 4-Bromofluorobenzene was recovered at 44.9 %, below the lower limit of 58%. The narrative states that the sample was reanalyzed with comparable results, confirming a matrix interference.

	% recovery	limits	Qualifier	Associated Sample
4-Bromofluorobenzene	44.9%	58-122	J-/UJ	A4-GP09A-170116
	54.3%	58-122	J-/UJ	A4-GP09A-170116 (RE)

\*\*Associated analytes - benzene, chlorobenzene, ethylbenzene, toluene, xylenes

**Matrix Spikes**

Matrix Spikes were not performed on the samples in this SDG

Blanks	MethodBlank	Concentration	ug/kg PQL	Sample	Qualifier
	methylene chloride	2.29	10	A4-GP15L-170116	16 U
				A4-GP15L-170116D	15 U
				A4-GP03A-170116	510 U
				A4-GP09A-170116	15 U
	Trichloroethene	0.26	5	None	Sample result nondetect

Internal Standards	Area	Area Lower / Upper Limit	Qualifiers	Associated Samples
1,4-Dichlorobenzene-d4	1,088,354	1,110,956 / 4,443,824	J+ / UJ	A4-GP09A-170116
*Associated analyte 1,1,2,2-Tetrachloroethane				

#### Representativeness:

Were sampling procedures and design criteria met?  
 Were holding times met?  
 Were preservation criteria met? (0 °C ± 6 °C)  
 Were Chain-of-Custody records complete and provided in data package?  
 Comments (note deviations):  
 Cooler temperature was 3.8 °C

Yes No N/A

Yes  
 Yes  
 Yes  
 Yes

#### Completeness (90%):

Are all data in this SDG useable?  
 Comments (note deviations):

Yes No N/A

Yes

#### Sensitivity:

Are MDLs present and reported?  
 Comments (note deviations):

Yes No N/A

Yes

Data Validator: Kim Zilis  
 Data Reviewer: Kristine Molloy

Date: 1/25/2017  
7/14/2017

**SE Rockford Area 4 ERH Sampling  
Data Evaluation Worksheet  
Level 4 Validation**

**Sample Delivery Group (SDG) Number:** 17010472  
**Laboratory:** STAT Analysis Corporation

**Matrix:** Soils  
**Collection date:** January 17, 2017  
**Analysis/Methods:** Volatile Organic Compounds - Method SW8260

**Samples in SDGs:**

Sample ID		
A4-GP06A-170117	17010472-001A	1:50 methanol
A4-GP08A-170117	17010472-002A	1:50 methanol
A4-GP01A-170117	17010472-003A	1:50 methanol

Validation was performed in accordance with the method and the EPA Organic National Functional Guidelines January 2017

The soils were collected with Encore samplers. All soils were analyzed from the methanol dilution due to the presence of diesel range hydrocarbons. (This information is from observing the chromatograms in the TRS sample analysis from Test America. Data from this package did not include chromatograms, the narrative states there was matrix interference.)

**Volatile Organic Compounds Method 8260**

**Precision:**

Were the Field Duplicate relative percent differences (RPD)  $\leq$  50%?  
Were the Matrix Spike Duplicate RPDs  $\leq$  30%?  
Were the Laboratory Control Spike Duplicate RPD  $\leq$  30%?  
**Comments (note deviations):**

**Yes No N/A**

N/A  
Yes  
Yes

Field duplicates were not collected. Matrix spikes and matrix spike duplicates were not performed. There are no precision QC samples with this data set.

**Accuracy:**

Were the Matrix Spike/Matrix Spike Duplicates recoveries within control limits?  
Were the Laboratory Control Sample recoveries within control limits?  
Were the Laboratory Method Blank results all < reporting limit?  
Were the Trip Blanks/Field Blanks results all < reporting limit?  
Was the ICAL criteria met?  
Was the CCV criteria met?  
Were the Tuning criteria met?  
Were the Surrogate % recoveries within laboratory determined control limits?  
Were the Internal Standard areas within  $\pm$  50 - 150%?

**Yes No N/A**

No  
Yes  
Yes  
N/A  
Yes  
No  
Yes  
Yes  
Yes

**Comments (note deviations):**

**General**

The methanol extraction was used for the analysis of all 3 samples. Base reporting limit is 5 ug/kg. In the field, approximately 5 grams of soil are added to 5 ml of methanol. The laboratory takes 100 ul of this extract into 5ml of water for analysis. This calculates to a 50x. A 10ul sample size would have been used for a 500x dilution.

**Calibration**

CCV	%D	Criteria (%)	Qualifier	Associated Sample
Acetone	25.7	20	J/UJ	All samples
2-Butanone	25.9	20	J/UJ	All samples

**Matrix Spikes**

	MS/MSD % Recovery	Criteria	Qualifier	Associated Sample
bromomethane	49.3 / 47	70 - 130	J/UJ	A4-GP08A-170117
chloroethane	55.8 / 57.2	70 - 130	J/UJ	A4-GP08A-170117
1,1,2,2-Tetrachloroethane	307 / 256	70 - 130	J**	A4-GP08A-170117

\*\*No qualification required - qualification required for detected results only, sample results nondetect.

**Blanks****MethodBlank**

No target compounds reported

**Representativeness:**

Were sampling procedures and design criteria met?

Were holding times met?

Were preservation criteria met? (0 °C ± 6 °C)

Were Chain-of-Custody records complete and provided in data package?

Comments (note deviations):

**Yes No N/A****Yes****Yes****Yes****Yes****Completeness (90%):**

Are all data in this SDG useable?

Comments (note deviations):

**Yes No N/A****Yes****Sensitivity:**

Are MDLs present and reported?

Comments (note deviations):

**Yes No N/A****Yes**

Data Validator:

Kim Zilis

Data Reviewer:

*Kristine Molloy*

Date: 1/25/2017

*7/15/2017*

**SE Rockford Area 4 ERH Sampling  
Data Evaluation Worksheet  
Level 2 Validation**

**Sample Delivery Group (SDG) Number:** 17020519  
**Laboratory:** STAT Analysis Corporation  
**Matrix:** Soils  
**Collection date:** February 16, 2017  
**Analysis/Methods:** Volatile Organic Compounds - Method SW8260

**Samples in SDGs:**

Sample ID	
A4-GP06A-170216	17020519-001
A4-GP06A-170216D	17020519-002
A4-GP01A-170216	17020519-003
A4-GP09A-170216	17020519-004

Validation was performed in accordance with the method and the EPA Organic National Functional Guidelines January 2017

**Volatile Organic Compounds Method 8260**

Precision:	Yes	No	N/A
Were the Field Duplicate relative percent differences (RPD) $\leq$ 50%?		Yes	
Were the Matrix Spike Duplicate RPDs $\leq$ 30%?		No	
Were the Laboratory Control Spike Duplicate RPD $\leq$ 30%?		Yes	
Comments (note deviations):			

**LCS / LCSD**

**LCS / LCSD % RPD**  
Acceptable

**Qualifier**      **Associated Sample**

**Matrix Spikes**

**MS/MSD**

	MS / MSD % RPD	Limits	Qualifier	Associated Sample
1,1,2,2,-Tetrachloroethane	45.1	20	J**	A4-GP09A-170216
2-Hexanone	23.5	20	J**	A4-GP09A-170216
4-Methyl-2-pentanone	20.1	20	J**	A4-GP09A-170216
Bromoform	21.3	20	J**	A4-GP09A-170216
Styrene	33.7	20	J**	A4-GP09A-170216
Xylenes	33	20	J**	A4-GP09A-170216

\*\*No qualification required - qualification required for detected results only, sample results nondetect.

Accuracy:	Yes	No	N/A
Were the Matrix Spike/Matrix Spike Duplicates recoveries within control limits?		No	
Were the Laboratory Control Sample recoveries within control limits?		Yes	
Were the Laboratory Method Blank results all < reporting limit?		No	
Were the Trip Blanks/Field Blanks results all < reporting limit?		N/A	
Was the ICAL criteria met?		N/A	
Was the CCV criteria met?		N/A	
Were the Tuning criteria met?		N/A	
Were the Surrogate % recoveries within laboratory determined control limits?		No	
Were the Internal Standard areas within $\pm$ 50 - 150%?		N/A	
Comments (note deviations):			

**General**  
Sample results are reported to the reporting limits. Results between the MDL and RL, which would be estimated (J) have not been reported.

**Calibration**

No calibration information provided



**Matrix Spikes**  
**MS/MSD**

	% Recovery	Limits	Qualifier	Associated Sample
1,1,2,2,-Tetrachloroethane	943 / 608	50-150	J**	A4-GP09A-170216
2-Hexanone	180 / 145	50-150	J**	A4-GP09A-170216
Bromoform	65.2 / 79.1	70-130	J/UJ	A4-GP09A-170216
Styrene	76.5 / 55.5	70-130	J/UJ	A4-GP09A-170216
Xylenes	70.3 / 51.4	70-130	J/UJ	A4-GP09A-170216

\*\*No qualification required - qualification required for detected results only, sample results nondetect.

**Blanks**

Method Blank	Concentration (mg/kg)	PQL (mg/kg)		Qualifier	Associated Sample
Ethylbenzene	0.00013	0.005		None	Sample results nondetect
Toluene	0.00021	0.005	ok	RL U	A4-GP06A-170216D, A4-GP01A-170216, A4-GP09A-170216
Chloroform	0.00119	0.005		None	Sample results nondetect

**LCS / LCSD**

LCS / LCSD % recovery Acceptable	limits	Qualifier	Associated Sample
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**Surrogate recoveries**

Surrogate	% BFB recovery	Limit %	Qualifier	Associated Samples
4-Bromofluorobenzene**	54.40%	71-120	J- / UJ	A4-GP01A-170216
	46.50%	71-120	J- / UJ	A4-GP01A-170216 RE

\*\*Associated analytes - benzene, chlorobenzene, ethylbenzene, toluene, xylenes

**Representativeness:**

Were sampling procedures and design criteria met?  
 Were holding times met?  
 Were preservation criteria met? (0 °C ± 6 °C)  
 Were Chain-of-Custody records complete and provided in data package?  
 Comments (note deviations):  
 Cooler temperature was 2.7 °C

Yes	No	N/A
Yes		
Yes		
Yes		
Yes		

**Completeness (90%):**

Are all data in this SDG useable?  
 Comments (note deviations):

Yes	No	N/A
Yes		

**Sensitivity:**

Are MDLs present and reported?  
 Comments (note deviations):

Yes	No	N/A
Yes		

Data Validator:

Kristine Molloy

Data Reviewer:

Cherie Zakowski

Date: 7/21/2017

7/22/2017

**SE Rockford Area 4 ERH Sampling  
Data Evaluation Worksheet  
Level 2 Validation**

<b>Sample Delivery Group (SDG) Number:</b>	17050731
<b>Laboratory:</b>	STAT Analysis Corporation
<b>Matrix:</b>	Soils
<b>Collection date:</b>	May 19, 2017
<b>Analysis/Methods:</b>	Volatile Organic Compounds - Method SW8260

**Samples in SDGs:**

<b>Sample ID</b>	
SB-408A-3436	17050731-001
SB-408A-3638	17050731-002
SB-408A-3840	17050731-003

Validation was performed in accordance with the method and the EPA Organic National Functional Guidelines January 2017

**Volatile Organic Compounds Method 8260**

<b>Precision:</b>	<b>Yes No N/A</b>
Were the Field Duplicate relative percent differences (RPD) $\leq$ 50%?	N/A
Were the Matrix Spike Duplicate RPDs $\leq$ 30%?	N/A
Were the Laboratory Control Spike Duplicate RPD $\leq$ 30%?	Yes
Comments (note deviations):	

**LCS / LCSD**

**LCS / LCSD % RPD**  
Acceptable

**Qualifier      Associated Sample**

<b>Accuracy:</b>	<b>Yes No N/A</b>
Were the Matrix Spike/Matrix Spike Duplicates recoveries within control limits?	N/A
Were the Laboratory Control Sample recoveries within control limits?	No
Were the Laboratory Method Blank results all < reporting limit?	No
Were the Trip Blanks/Field Blanks results all < reporting limit?	N/A
Was the ICAL criteria met?	N/A
Was the CCV criteria met?	N/A
Were the Tuning criteria met?	N/A
Were the Surrogate % recoveries within laboratory determined control limits?	Yes
Were the Internal Standard areas within $\pm$ 50 - 150%?	N/A

Comments (note deviations):

**General**

Sample results are reported to the reporting limits. Results between the MDL and RL, which would be estimated (J) have not been reported.

**Calibration**

No calibration information provided

**Matrix Spikes**

Matrix Spikes were not performed.

**Blanks**

	<b>Concentration (mg/kg)</b>	<b>PQL (mg/kg)</b>		
<b>Method Blank</b>			<b><u>Qualifier</u></b>	<b><u>Associated Sample</u></b>
Benzene	0.00021	0.005	None	Sample results nondetect
Methylene Chloride	0.00287	0.01	None	Sample results nondetect

**LCS / LCSD****LCS / LCSD %****recovery**

141 / 144

**limits**

70 - 130

**Qualifier**

J\*\*

**Associated Sample**

All samples

carbon disulfide

\*\*No qualification required - qualification required for detected results only, sample results nondetect.

**Representativeness:**

Were sampling procedures and design criteria met?

Were holding times met?

Were preservation criteria met? (0 °C ± 6 °C)

Were Chain-of-Custody records complete and provided in data package?

Comments (note deviations):

Cooler temperature was 3.7 °C

**Yes No N/A**

Yes

Yes

Yes

Yes

**Completeness (90%):**

Are all data in this SDG useable?

Comments (note deviations):

**Yes No N/A**

Yes

**Sensitivity:**

Are MDLs present and reported?

Comments (note deviations):

**Yes No N/A**

Yes

Data Validator:

Kristine Molloy

Data Reviewer:

Cherie ZakowskiDate: 7/20/20177/21/2017

**SE Rockford Area 4 ERH Sampling  
Data Evaluation Worksheet  
Level 4 Validation**

**Sample Delivery Group (SDG) Number:**

680-121487-1

**Laboratory:**

Test America

**Matrix:**

Soils

**Collection date:**

December 13 - 14, 2016

**Analysis/Methods:**

Volatile Organic Compounds - Method SW8260

**Samples in SDGs:**

Split Samples	Sample ID	Lab ID	Dilution
	SS16-8'-SOL-20161213	500-121487-1	50x
	SS16-16'-SOL-20161213	500-121487-2	50x
SS14-24'	SS16-24'-SOL-20161213	500-121487-3	50x
SS14-37'	SS16-32'-SOL-20161213	500-121487-4	500x
	SS17-8'-SOL-20161213	500-121487-5	
SS13-24'	SS17-16'-SOL-20161213	500-121487-6	
SS13-32'	SS17-24'-SOL-20161213	500-121487-7	
	SS17-32'-SOL-20161213	500-121487-8	100x
SS11-24'	SS18-8'-SOL-20161213	500-121487-9	
SS11-32'	SS18-16'-SOL-20161213	500-121487-10	
	SS18-24'-SOL-20161213	500-121487-11	
SS9-32'	SS18-32'-SOL-20161213	500-121487-12	50x
SS8-37'	SS15-8'-SOL-20161214	500-121487-13	
SS1-37'	SS15-16'-SOL-20161214	500-121487-14	
	SS15-24'-SOL-20161214	500-121487-15	50x
	SS15-32'-SOL-20161214	500-121487-16	100x
	SS15-24'-SOL-20161214-Dup	500-121487-17	50x
	SS15-32'-SOL-20161214-Dup	500-121487-18	100x
	SS3-32'-SOL-20161214	500-121487-19	500x
	SS3-37'-SOL-20161214	500-121487-20	

None of the above samples were split for analysis by STAT

Validation was performed in accordance with the method and the EPA Organic National Functional Guidelines January 2017

The soils were collected with Encore samplers. All soils were analyzed from the methanol dilution due to the presence of diesel range hydrocarbons.

**Volatile Organic Compounds Method 8260**

**Precision:**

Were the Field Duplicate relative percent differences (RPD)  $\leq$  50%?

**Yes No N/A**

**Yes**

Were the Matrix Spike Duplicate RPDs  $\leq$  30%?

**N/A**

Were the Laboratory Control Spike Duplicate RPD  $\leq$  30%?

**Yes**

Comments (note deviations):

Matrix spikes were not performed on the samples in this SDG

**Accuracy:**

Were the Matrix Spike/Matrix Spike Duplicates recoveries within control limits?

**Yes No N/A**

**N/A**

Were the Laboratory Control Sample recoveries within control limits?

**No**

Were the Laboratory Method Blank results all < reporting limit?

**Yes**

Were the Trip Blanks/Field Blanks results all < reporting limit?

**N/A**

Was the ICAL criteria met?

**Yes**

Was the CCV criteria met?

**Yes**

Were the Tuning criteria met?

**Yes**

Were the Surrogate % recoveries within laboratory determined control limits?

**Yes**

Were the Internal Standard areas within  $\pm$  50 - 150%?

**Yes**

Comments (note deviations):

**Blanks**

**MethodBlank**

No target compounds were reported in the blanks

**LCS / LCSD**

<u>Analyte</u>	<u>Analytical Batch</u>	<u>LCS % recovery</u>	<u>Limits</u>	<u>Qualifier</u>	<u>Associated Samples</u>
1,2-Dichloropropane	365459	69	70 - 125	J/UJ	500-121487-1 through 500-121487-4 500-121487-8 & 500-121487-17 through 500-121487-19
Carbon disulfide	365707	67	68 - 125	J/UJ	500-121487-16

**Matrix Spikes**

Matrix spikes were performed on samples in batch J121609

**Representativeness:**

Were sampling procedures and design criteria met?

Were holding times met?

Were preservation criteria met? (0 °C ± 6 °C)

Were Chain-of-Custody records complete and provided in data package?

\*\* Login Sample Receipt Checklist indicates the temperature was acceptable - no temperature was reported in the SDG paperwork or on the COC.

Yes No N/A

Yes

Yes

NR\*\*

Yes

Comments (note deviations):

**Completeness (90%):**

Are all data in this SDG useable?

Comments (note deviations):

Yes No N/A

Yes

**Sensitivity:**

Are MDLs present and reported?

Comments (note deviations):

Yes No N/A

Yes

Login Sample Receipt Checklist indicates the laboratory received a Trip Blank - no Trip Blank was analyzed for this SDG.

Data Validator:

Kim Zilis

Date: 12/22/2016

Data Reviewer:

Kristine Molloy

6/30/2017



**SE Rockford Area 4 ERH Sampling  
Data Evaluation Worksheet  
Level 4 Validation**

**Sample Delivery Group (SDG) Number:** 680-121487-2  
**Laboratory:** Test America  
**Matrix:** Soils  
**Collection date:** December 13 - 14, 2016  
**Analysis/Methods:** Volatile Organic Compounds - Method SW8260

**Samples in SDGs:**

Split Samples	Sample ID	Lab ID	Dilution
	SS14-8'-SOL-20161214	500-121487-21	50x
	SS14-16'-SOL-20161214	500-121487-22	50x
	SS14-24'-SOL-20161214	500-121487-23	50x
SS14-24'	SS14-37'-SOL-20161214	500-121487-24	50x
SS14-37'	SS14-8'-SOL-20161214-Dup	500-121487-25	100x
	SS14-16'-SOL-20161214-Dup	500-121487-26	50x
SS13-24'	SS13-8'-SOL-20161214	500-121487-27	100x
SS13-32'	SS13-16'-SOL-20161214	500-121487-28	50x
	SS13-16'-SOL-20161214-Dup	500-121487-29	50x
SS11-24'	SS13-24'-SOL-20161214	500-121487-30	50x
SS11-32'	SS13-32'-SOL-20161214	500-121487-31	100x
	Trip Blank 1	500-121487-32	
SS9-32'	Trip Blank 2	500-121487-33	
SS8-37'	Trip Blank 3	500-121487-34	
SS1-37'			

Validation was performed in accordance with the method and the EPA Organic National Functional Guidelines January 2017

The soils were collected with Encore samplers. All soils were analyzed from the methanol dilution due to the presence of diesel range hydrocarbons.

**Volatile Organic Compounds Method 8260**

**Precision:**

Were the Field Duplicate relative percent differences (RPD)  $\leq$  50%?  
 Were the Matrix Spike Duplicate RPDs  $\leq$  30%?  
 Were the Laboratory Control Spike Duplicate RPD  $\leq$  30%?  
 Comments (note deviations):

Yes	No	N/A
Yes		
N/A		
N/A		

**Accuracy:**

Were the Matrix Spike/Matrix Spike Duplicates recoveries within control limits?  
 Were the Laboratory Control Sample recoveries within control limits?  
 Were the Laboratory Method Blank results all < reporting limit?  
 Were the Trip Blanks/Field Blanks results all < reporting limit?  
 Was the ICAL criteria met?  
 Was the CCV criteria met?  
 Were the Tuning criteria met?  
 Were the Surrogate % recoveries within laboratory determined control limits?  
 Were the Internal Standard areas within  $\pm$  50 - 150%?  
Comments (note deviations):

Yes	No	N/A
N/A		
No		
Yes		
No		
Yes		
Yes		
Yes		
Yes		

**Matrix Spikes**

Matrix Spikes were not performed on the samples in this SDG

**Blanks**

**MethodBlank**

No target compounds were reported in the blanks

**Trip Blank**

Acetone was detected in trip blank 2 (12/13) at 5.9 ug/L

Qualifier	Associated Sample
None	Sample results nondetect

No target compounds were detected in trip blank 1 or 3 (12/13)

## LCS

<u>Analyte</u>	<u>LCS % recovery</u>	<u>Limits</u>	<u>Qualifier</u>	<u>Associated Sample</u>
1,2-Dichloropropane	69	70 - 125	None	LCS associated with Trip Blanks - no qualification required

**Representativeness:**

Were sampling procedures and design criteria met?

Yes No N/A

Yes

Were holding times met?

Yes

Were preservation criteria met? (0 °C ± 6 °C)

Yes

Were Chain-of-Custody records complete and provided in data package?

Yes

Comments (note deviations):

Cooler temperatures were -0.3, 1.6 and 2.6 °C - no qualification was required as the -0.3 °C reading was just below 0 °C, the remaining readings were within acceptable criteria.

**Completeness (90%):**Yes No N/A

Are all data in this SDG useable?

Yes

Comments (note deviations):

**Sensitivity:**Yes No N/A

Are MDLs present and reported?

Yes

Comments (note deviations):

Data Validator:

Kim ZilisDate: 12/22/2016

Data Reviewer:

Kristine Molloy7/1/2017

**SE Rockford Area 4 ERH Sampling  
Data Evaluation Worksheet  
Level 4 Validation**

**Sample Delivery Group (SDG) Number:**

500-121609-1

**Laboratory:**

Test America

**Matrix:**

Soils

**Collection date:**

December 15 - 16, 2016

**Analysis/Methods:**

Volatile Organic Compounds - Method SW8260

**Samples in SDGs:**

	Sample ID	Lab ID	Dilution
<b>Split Samples</b>	SS11-8'-SOL-20161215	500-121609-1	50x
	SS11-16'-SOL-20161215	500-121609-2	50x
	SS11-24'-SOL-20161215	500-121609-3	50x
	SS11-32'-SOL-20161215	500-121609-4	500x
	SS14-24'	500-121609-5	50x
	SS14-37'	500-121609-6	50x
	SS12-8'-SOL-20161215	500-121609-7	50x
	SS12-16'-SOL-20161215	500-121609-8	100x
	SS12-24'-SOL-20161215	500-121609-9	100x
	SS12-32'-SOL-20161215	500-121609-10	1x
	SS9-32'-SOL-20161215	500-121609-11	500x
	SS7-32'-SOL-20161215	500-121609-12	500x
	SS11-24'	500-121609-13	500x
	SS11-32'	500-121609-14	500x
	SS6-37'-SOL-20161216	500-121609-15	100x
	SS9-32'	500-121609-16	50x
	SS5-37'-SOL-20161216	500-121609-17	
	SS8-37'	500-121609-18	
	SS4-37'-SOL-20161216	500-121609-19	
	SS10-32'-SOL-20161216		
	Trip Blank - 1		
	Trip Blank - 2		

None of the above samples were split for analysis by STAT

Validation was performed in accordance with the method and the EPA Organic National Functional Guidelines January 2017

The soils were collected with Encore samplers. All soils were analyzed from the methanol dilution due to the presence of diesel range hydrocarbons.

**Volatile Organic Compounds Method 8260**

**Precision:**

Were the Field Duplicate relative percent differences (RPD)  $\leq$  50%?

**Yes No N/A**

Were the Matrix Spike Duplicate RPDs  $\leq$  30%?

N/A

Were the Laboratory Control Spike Duplicate RPD  $\leq$  30%?

Yes

Comments (note deviations):

Yes

See SDG ID J121487-1 for field duplicates

**Matrix Spikes**

% RPD

Limits

Acceptable

**LCS/LCSD**

% RPD

Limits

Acceptable

**Accuracy:**

Were the Matrix Spike/Matrix Spike Duplicates recoveries within control limits?

**Yes No N/A**

Were the Laboratory Control Sample recoveries within control limits?

No

Were the Laboratory Method Blank results all < reporting limit?

Yes

Were the Trip Blanks/Field Blanks results all < reporting limit?

Yes

Was the ICAL criteria met?

No

Was the CCV criteria met?

Yes

Were the Tuning criteria met?

Yes

Were the Surrogate % recoveries within laboratory determined control limits?

Yes

Were the Internal Standard areas within  $\pm$  50 - 150%?

Yes

Comments (note deviations):

Yes

**Matrix Spikes**

	% Recovery	Limits	Qualifiers	Associated Samples
1,1,2,2-Tetrachloroethane	115 / 132*	68 - 125	J**	SS11-8'-SOL-20161215
**No qualification required - qualification required for detected results only, sample results nondetect.				

**LCS/LCSD**

% Recovery	Limits
Acceptable	

**Blanks****Method Blank**

No target compounds were reported in the blanks

**Trip Blank**

Acetone was detected in trip blank 1 (12/15) at 7.0 ug/L

No target compounds were detected in trip blank 2 (12/15)

**Representativeness:**

Were sampling procedures and design criteria met?  
Were holding times met?  
Were preservation criteria met? (0 °C ± 6 °C)  
Were Chain-of-Custody records complete and provided in data package?  
Comments (note deviations):  
Cooler temperatures were 4.8 & 5.1 °C

Yes	No	N/A
Yes		
Yes		
Yes		
Yes		

**Completeness (90%):**

Are all data in this SDG useable?  
Comments (note deviations):

Yes	No	N/A
Yes		

**Sensitivity:**

Are MDLs present and reported?  
Comments (note deviations):

Yes	No	N/A
Yes		

Data Validator:

Kim Zilis

Data Reviewer:

*Kristine Molloy*

Date: 12/22/2016

*7/12/2017*

**SE Rockford Area 4 ERH Sampling  
Data Evaluation Worksheet  
Level 4 Validation**

**Sample Delivery Group (SDG) Number:** 500-122698-1  
**Laboratory:** Test America  
**Matrix:** Soils  
**Collection date:** January 16 and 17, 2017  
**Analysis/Methods:** Volatile Organic Compounds - Method SW8260B

**Samples in SDGs:**

Split Samples	Sample ID	Lab ID	Dilution
	SS1-37'-SOL-20170117	500-122698-1	100x
	SS3-32'-SOL-20170116	500-122698-2	100x
SS1-37'	SS8-37'-SOL-20170117	500-122698-3	100x
SS3-32'	SS9-32'-SOL-20170116	500-122698-4	100x
SS8-37'	SS15-32'-SOL-2017	500-122698-5	50x
SS9-32'	SS17-32'-SOL-20170116	500-122698-6	50x
SS15-32'	SS17-32'-SOL-20170116-DUP	500-122698-7	50x
SS6-32'	SS6-32'-SOL-20170117	500-122698-8	50x
	Trip Blank	500-122698-9	1x

Validation was performed in accordance with the method and the EPA Organic National Functional Guidelines January 2017

The soils were collected with Encore samplers. All soils were analyzed from the methanol dilution due to the presence of diesel range hydrocarbons.

**Volatile Organic Compounds Method 8260**

Precision:	Yes	No	N/A
Were the Field Duplicate relative percent differences (RPD) $\leq$ 50%?	Yes		
Were the Matrix Spike Duplicate RPDs $\leq$ 30%?	NA		
Were the Laboratory Control Spike Duplicate RPD $\leq$ 30%?	NA		
Comments (note deviations): Matrix spikes were not performed on the samples in this SDG			

Accuracy:	Yes	No	N/A
Were the Matrix Spike/Matrix Spike Duplicates recoveries within control limits?	NA		
Were the Laboratory Control Sample recoveries within control limits?	No		
Were the Laboratory Method Blank results all < reporting limit?	Yes		
Were the Trip Blanks/Field Blanks results all < reporting limit?	No		
Was the ICAL criteria met?	Yes		
Was the CCV criteria met?	Yes		
Were the Tuning criteria met?	Yes		
Were the Surrogate % recoveries within laboratory determined control limits?	No		
Were the Internal Standard areas within $\pm$ 50 - 150%?	Yes		
Comments (note deviations):			

**Blanks**

**MethodBlank**

No target compounds were reported in the blanks

**LCS**

	Analytical Batch	LCS % recovery	limits	Qualifier	Associated Samples
chloroethane	369072	54	60 - 139	J/UJ	All samples with the exception of the TB



Surrogate recoveries

Surrogate	% BFB recovery	Limit %	Qualifier	Associated Samples
4-Bromofluorobenzene*	121	71-120	J+ **	SS1-37'-SOL-20170117
	123	71-120	J+ **	SS3-32'-SOL-20170116
	126	71-120	J+ **	SS8-37'-SOL-20170117
	122	71-120	J+	SS9-32'-SOL-20170116
	127	71-120	J+	SS6-32'-SOL-20170117

\*\*Associated analytes - benzene, chlorobenzene, ethylbenzene, toluene, xylenes

Representativeness:

Were sampling procedures and design criteria met?  
Were holding times met?  
Were preservation criteria met? (0 °C ± 6 °C)  
Were Chain-of-Custody records complete and provided in data package?  
Comments (note deviations):

Yes	No	N/A
Yes		
Yes		
No		
Yes		

Cooler temperature was -0.9 °C - no qualification was required as the -0.3 °C reading was just below 0 °C.

Completeness (90%):

Are all data in this SDG useable?  
Comments (note deviations):

Yes	No	N/A
Yes		

Sensitivity:

Are MDLs present and reported?  
Comments (note deviations):

Yes	No	N/A
Yes		

Data Validator: Kim Zilis  
Data Reviewer: Kristine Molloy

Date: 1/25/2017  
7/15/2017

**RFD75  
Rockford, Illinois  
Data Validation Report**

**Sample Delivery Group (SDG) Number:** J124029-01  
**Laboratory:** Test America  
**Matrix:** Soil  
**Collection date:** 02/17/17  
**Analysis/Methods:** Volatile Organic Compounds 8260B  
 % Moisture

**Samples in SDG:**

500-124029-1	SS6-32'-SOL-20170216
500-124029-2	SS1-37'-SOL-20170216
500-124029-3	SS9-32'-SOL-20170216
500-124029-4	SS1-37'-SOL-20170216-Dup
500-124029-5	Trip Blank

Data validation was performed in accordance with the specific analytical methods and the U.S. EPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (September 2016).

**Volatile Organic Compounds 8260B**

<b>Precision:</b>	<b>Yes No N/A</b>
Are the field duplicate relative percent differences (RPD) ≤50%?	Yes
Were the Matrix Spike Duplicate RPDs ≤ 20%? (Or lab defined limits)	Yes
Laboratory Control Spike Duplicates RPD within limits?	N/A
<b><u>Comments (note deviations):</u></b>	

<b>Field Duplicates</b>	<b><u>8260B</u></b>	<b><u>Sample</u></b>	<b><u>Duplicate</u></b>	<b><u>%RPD</u></b>	<b><u>Qualifiers</u></b>	<b><u>Associated Samples</u></b>
		SS1-37'-SOL-20170216 ND	SS1-37'-SOL-20170216-Dup ND			

<b>LCS/LCSD</b>	<b><u>8260B</u></b>	<b><u>%RPD</u></b>	<b><u>Limits</u></b>	<b><u>Qualifiers</u></b>	<b><u>Associated Samples</u></b>
N/A					

<b>MS/MSD</b>	<b><u>8260B</u></b>	<b><u>%RPD</u></b>	<b><u>Limit</u></b>	<b><u>Qualifiers</u></b>	<b><u>Associated Samples</u></b>
500-124029-1 MS / MSD		Acceptable			

<b>Laboratory Duplicate</b>	<b><u>Sample</u></b>	<b><u>Duplicate</u></b>	<b><u>MDL / RL</u></b>	<b><u>%RPD</u></b>	<b><u>Qualifier</u></b>	<b><u>Associated Samples</u></b>
N/A						

<b>Accuracy:</b>	<b>Yes No N/A</b>
Was the Matrix Spike/Matrix Spike Duplicate criteria met? (frequency ≥ 5% and laboratory determined control limits)	Yes
Laboratory Control Sample criteria met?	Yes
Were the Laboratory Method Blank results all < RL?	Yes
Were the Field Blanks results all < RL?	Yes
Was the ICAL criteria met?	Yes
Was the CCV criteria met?	Yes
Was the Tuning criteria met?	Yes
Were the Surrogate % recoveries within laboratory determined control limits?	Yes
Were the Internal Standard areas within ± 50 - 150%?	Yes
<b><u>Comments (note deviations):</u></b>	

<b>Blanks</b>	<b><u>8260B</u></b>	<b><u>Concentration</u></b>	<b><u>MDL / RL</u></b>	<b><u>Qualifiers</u></b>	<b><u>Associated Samples</u></b>
MB 500-372656 / 6		Nondetect			
MB 500-372657 / 6		Nondetect			

<b>Field Blank</b>	<b><u>8260B</u></b>	<b><u>Concentration (ug/L)</u></b>	<b><u>MDL / RL</u></b>	<b><u>Qualifiers</u></b>	<b><u>Associated Samples</u></b>
Trip Blank		Nondetect			

Surrogates	<u>8260B</u>	<u>%R</u> Acceptable	<u>Limit</u>	<u>Qualifiers</u>	<u>Associated Samples</u>
<b>MS/MSD</b> 500-124029-1 MS / MSD	<u>8260B</u>	<u>%R</u> Acceptable	<u>Limits (%)</u>	<u>Qualifiers</u>	<u>Associated Samples</u>
<b>LCS/LCSD</b> LCS 500-372656 / 5  LCS 500-372657 / 5	<u>8260B</u>	<u>%R</u> Acceptable  Acceptable	<u>Limits</u>	<u>Qualifiers</u>	<u>Associated Samples</u>
<b>ICAL</b> (1/18/17 15:18)	<u>8260B</u>		<u>RRF</u> Acceptable	<u>%RSD</u> Acceptable	<u>Qualifiers</u> <u>Associated Samples</u>
<b>CCV</b> (1/19/17 00:34)  (1/19/17 00:59)  (2/19/17 19:53)  (2/19/17 20:18)	<u>8260B</u>		<u>RRF</u> Acceptable  Acceptable  Acceptable  Acceptable	<u>%D</u> Acceptable  Acceptable  Acceptable  Acceptable	<u>Qualifiers</u> <u>Associated Samples</u>
<b>Tune</b>	<u>8260B</u> Acceptable				
<b>Internal Standards</b>	<u>8260B</u> Acceptable			<u>Qualifiers</u>	<u>Associated Samples</u>

<b>Representativeness:</b>	<u>Yes</u> <u>No</u> <u>N/A</u>
Were sampling procedures and design criteria met?	<u>Yes</u>
Were holding times met?	<u>Yes</u>
Was preservation criteria met? (0° - 6° C)	<u>Yes</u>
Were Chain-of-Custody records complete and provided in data package?	<u>Yes</u>
<u>Comments (note deviations): Cooler temperature was -2.9 ° C . Based on professional judgement no qualifiers were required.</u>	

Holding Times	<u>Days to Analysis</u>	<u>HT Criteria</u> Acceptable	<u>Qualifier</u>	<u>Associated Samples</u>
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<b>Comparability:</b>	<u>Yes</u> <u>No</u> <u>N/A</u>
Were analytical procedures and methods followed as defined in the QAPP or field change documentation?	<u>Yes</u>
<u>Comments (note deviations):</u>	

<b>Completeness (90%):</b>	<u>Yes</u> <u>No</u> <u>N/A</u>
Are all data in this SDG usable?	<u>Yes</u>
<u>Comments (note deviations):</u>	

<b>Sensitivity:</b>	<u>Yes</u> <u>No</u> <u>N/A</u>
Are MDLs present and reported?	<u>Yes</u>
Do the reporting limits meet project requirements?	<u>Yes</u>
<u>Comments (note deviations):</u>	

**Overall Comments:** All data are usable with appropriate qualifiers applied.

Data Validator:	<u>Kristine Molloy</u>	Date: <u>2/21/2017</u>
Data Reviewer:	<u>Cherie Zakowski</u>	Date: <u>2/22/2017</u>

## Appendix E

### Final Demobilization Memorandum



125 South Wacker Drive, Suite 700  
Chicago, IL 60606  
tel: 312 346-5000  
fax: 312 346-5228

April 10, 2017

Mr. Brian Conrath  
Illinois Environmental Protection Agency  
1021 N. Grand Avenue East  
Springfield, IL 62702-4059

Subject: Source Area 4 Remedial Action  
Electrical Resistance Heating Demobilization Checklist  
Southeast Rockford Groundwater Contamination Superfund Site  
Rockford, Winnebago County, Illinois

Dear Mr. Conrath:

A demobilization meeting was held at Area 4 on April 6, 2017 at 11:00 am between TRS Group, Inc. (TRS), CDM Smith, Inc. (CDM Smith), Bodine Environmental Services, Inc. (Bodine), the Illinois Environmental Protection Agency (Illinois EPA), and the United States Environmental Protection Agency (U.S. EPA). This meeting was held to establish the completion of electrical resistance heating at Area 4 conducted by TRS. Below is the completion status of each item from the attached Demobilization Checklist and any additional comments associated with each item. A photolog is also attached.

**Item #1:**

All boreholes (i.e., electrodes and monitoring points) properly abandoned to grade

**Completion Status:**

Complete

**Additional Comments:**

All boreholes and monitoring points were previously cut off approximately 2 feet below ground surface. Once cut, the borehole was filled with a concrete slurry up to existing grade.

**Item #2:**

Below grade utilities properly removed or abandoned

**Completion Status:**

Complete

**Additional Comments:**

A concrete slurry was pumped into all below grade pipes. A pump was connected to the vapor recovery pipe at each multi-phase extraction electrode and concrete slurry was pumped into the pipe until the slurry came back out the water recovery pipe attached to the same multi-phase extraction electrode. Once the pipes and boreholes were filled with concrete, the piping was cut below grade and concrete was placed on top up to existing grade.



Mr. Brian Conrath  
April 10, 2017  
Page 2

**Item #3:**

All equipment removed from site

**Completion Status:**

In progress

**Additional Comments:**

Only piece of equipment that remains on site is the tank TRS had delivered to store excess water. The tank is scheduled to be pumped out on April 7, 2017, and then removed from the site the week of April 10, 2017.

**Item #4:**

Chain link fencing removed and post holes filled in

**Completion Status:**

Complete

**Additional Comments:**

No additional comments.

**Item #5:**

Former electrical power connection secured

**Completion Status:**

Complete

**Additional Comments:**

Commonwealth Edison still needs to remove their equipment (i.e., electrical meter) from the pole. The equipment has been de-energized. They have been notified that they can remove their equipment at their earliest convenience. No scheduled date of equipment removal.

**Item #6:**

Groundwater Extraction Treatment System (GETS) returned to pre-ERH condition (piping and I&C)

**Completion Status:**

Complete

**Additional Comments:**

Brett Baker of Bodine returned the GETS vault (including disconnection of piping) back to pre-ERH condition.

**Item #7:**

Authorities notified that building will be vacant

**Completion Status:**

In progress

**Additional Comments:**

CDM Smith will notify the Rockford Police Department that work is no longer being conducted on site and that the building will be vacant.



Mr. Brian Conrath  
April 10, 2017  
Page 3

**Item #8:**

Debris, waste, and IDW removed from inside and outside of the building

**Completion Status:**

In progress

**Additional Comments:**

The only remaining waste still on site are two drums containing spent carbon located just inside of the overhead door to the building. Once TRS receives the waste profile from Evoqua, the drums will be removed from the site and properly disposed.

**Item #9:**

New locks on overhead and man doors

**Completion Status:**

Complete

**Additional Comments:**

Currently there is a combination lock on the man door to keep it secure until a more robust lock can be placed. The new padlock will be placed on the man door by CDM Smith personnel upon the next site visit.

If you have any questions or comments, please contact me at (312) 780-7737.

Sincerely,

John C. Grabs, P.G.  
Senior Project Manager  
CDM Smith, Inc.

**Demobilization Checklist**  
**Source Area 4 Remedial Action, Electrical Resistance Heating**  
**Southeast Rockford Groundwater Contamination Superfund Site**

Date: April 6, 2017

Time: 11:00 am, CDT

Present: Brian Conrath, Illinois EPA  
Chris Thomas, TRS  
Brad Morris, TRS  
Brett Baker, Bodine  
John Grabs, CDM Smith  
Andrew Schamber, CDM Smith  
Karen Kirchner, U.S. EPA  
Tim Fischer, U.S. EPA

Item	Complete?	Comments
All boreholes (e.g., electrodes and monitoring points) properly abandoned to grade	Yes	
Below grade utilities properly removed or abandoned	Yes	
All equipment removed from site	In Progress	One 6,000-gallon tank is still on site. Tank should be removed week of April 10, 2017.
Chain link fencing removed and post holes filled in	Yes	
Former electrical power connection secured	Yes	ComEd still needs to remove their equipment from the pole.
GETS returned to pre-ERH condition (piping and I&C)	Yes	
Authorities notified that building will be vacant	In Progress	CDM Smith to follow up with Rockford Police Department.
Debris, waste, and IDW removed inside and outside	In Progress	2 drums located inside of building are awaiting a waste profile.
New locks on overhead and man doors	Yes	CDM Smith to replace with more robust lock.
<b>Other Observations</b>		

# Appendix F

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## Photographic Log




Photographic Log			Project: IEPA Rockford Area 4	Project Number: 80527
Photo No. <b>1</b>	Date: 07/18/2016	Time: 1101		
Direction:				
Northeast				
Description:				
Trees were trimmed on site to allow for installation of ERH equipment.				

Photo No. <b>2</b>	Date: 07/11/2016	Time: 1321	
Direction: North			
Description:  Terra Probe used a Geoprobe 6620 track-mounted rig to install multi-phase extraction (MPE) electrodes inside of existing building.			

<b>Photo No.</b> <b>3</b>	<b>Date:</b> 07/20/2016	<b>Time:</b> 1039	
<b>Direction:</b>  West			
<b>Description:</b>  K&S Engineers began installing borings outside of the building using a Central Mine Equipment Co. 850 steel track-mounted drilling rig, but ceased using this drill rig and began using a Diedrich-120 truck-mounted drill rig to avoid damaging asphalt pavement.			



<b>Photo No.</b> <b>4</b>	<b>Date:</b> 07/11/2016	<b>Time:</b> 1341
<b>Direction:</b> North		
<b>Description:</b>  After the Schedule 40 black iron steel pipe was installed, a copper groundwater extraction pipe was lowered into the hole and screwed into the bottom of a cap placed on top of the black iron pipe. The copper extraction pipe was placed approximately 6 inches into the top of groundwater.		



<b>Photo No.</b> <b>5</b>	<b>Date:</b> 08/09/2016	<b>Time:</b> 0845
<b>Direction:</b> N/A		
<b>Description:</b>  After installation of black iron steel pipe, batches of graphite/iron shot were mixed in a wheelbarrow. The mixture consisted of one 50-pound bag of iron shot for every three 50-pound bags of SWS Earth Contact Backfill graphite. Batch was well mixed and hydrated with water from a hose on site.		



<b>Photo No.</b> <b>6</b>	<b>Date:</b> 08/02/2016	<b>Time:</b> 1121
<b>Direction:</b> South		
<b>Description:</b>  In Zones 2 and 3, #4 silica/bluestone sand was poured into the annulus on top of the installed graphite/iron shot mixture.		



<b>Photo No.</b> <b>7</b>	<b>Date:</b> 08/08/2016	<b>Time:</b> 1527
<b>Direction:</b> N/A		
<b>Description:</b>  After the annulus was filled, a cap was screwed onto the black iron steel pipe and a copper drip tube was placed next to it.		



<b>Photo No.</b> <b>8</b>	<b>Date:</b> 08/08/2016	<b>Time:</b> 1613
<b>Direction:</b> N/A		
<b>Description:</b>  After the cap was screwed on to the black iron steel pipe, a 10-inch CPVC sleeve was placed around the electrode and held into place with Type I Portland cement.		



<b>Photo No.</b> <b>9</b>	<b>Date:</b> 08/18/2016	<b>Time:</b> 0957
<b>Direction:</b> North		
<b>Description:</b>  After CPVC oversleeve was set, two 1.5-inch diameter holes were drilled into oversleeve and 4-foot long sections of 1-inch diameter thermally insulated, chemical-resistant tubing was connected to the electrode cap.		





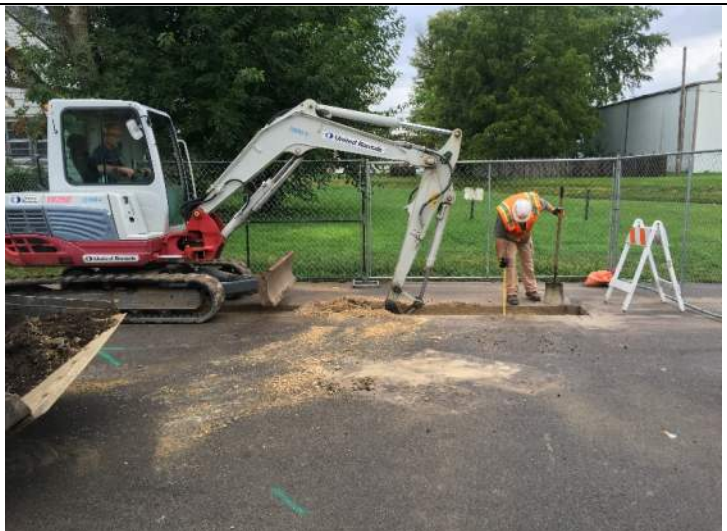
<b>Photo No.</b> <b>10</b>	<b>Date:</b> 08/29/2016	<b>Time:</b> 1054
<b>Direction:</b> Southeast		
<b>Description:</b>  Diamond Cut Concrete Cutters onsite sawcutting trenches in Marshall St.		





<b>Photo No.</b> <b>11</b>	<b>Date:</b> 08/29/2016	<b>Time:</b> 1112
<b>Direction:</b>		
<b>Description:</b>  K&S over-drilling multi-level well (MLW-01) located on site. The well was grouted from bottom to top of casing then over-drilled to 10 feet below ground surface. Concrete was then poured into well vault and settled to 2.5 feet below ground surface.		




<b>Photo No.</b> <b>12</b>	<b>Date:</b> 08/30/2016	<b>Time:</b> 0805
<b>Direction:</b>  East		
<b>Description:</b>  TRS began trenching in Marshall St. starting on the Southeast corner and working their way to the North.		



<b>Photo No.</b> <b>13</b>	<b>Date:</b> 08/30/2016	<b>Time:</b> 1650	
<b>Direction:</b> South			
<b>Description:</b>  Asphalt from the trenches in Marshall Street was stockpiled in the southwest corner of the property. All of the asphalt was recycled at the end of trenching activities.			

<b>Photo No.</b> <b>14</b>	<b>Date:</b> 08/31/2016	<b>Time:</b> 0857	
<b>Direction:</b>  East			
<b>Description:</b>  A stormwater pipe was encountered while digging a north-south trench between the "C" and "D" row of electrodes. After discussions, a new trench was sawcut 4 feet to the east of planned trench.			

<b>Photo No.</b> <b>15</b>	<b>Date:</b> 09/01/2016	<b>Time:</b> 0816
<b>Direction:</b>  North		
<b>Description:</b>  TRS excavated near Bodine's groundwater extraction vault so that 2 holes could be drilled into the side for placement of the blowdown line and a communications cable.		





<b>Photo No.</b> <b>16</b>	<b>Date:</b> 09/01/2016	<b>Time:</b> 1156
<b>Direction:</b> South		
<b>Description:</b>  The blowdown pipe was pressure tested by placing valves on each side and filling the pipe with water so that the internal pressure was between 40 and 70 psi.		



<b>Photo No.</b> <b>17</b>	<b>Date:</b> 09/01/2016	<b>Time:</b> 1423
<b>Direction:</b> North		
<b>Description:</b>  Flowable backfill (Illinois DOT specified) was placed in trench by Ozinga.		



<b>Photo No.</b> <b>18</b>	<b>Date:</b> 09/06/2016	<b>Time:</b> 1335
<b>Direction:</b> East		
<b>Description:</b>  East-west trench with all of the underground piping.		





<b>Photo No.</b> <b>19</b>	<b>Date:</b> 09/06/2016	<b>Time:</b> 1554
<b>Direction:</b> East		
<b>Description:</b>  Three 1.25-inch holes were drilled into side of EW003 vault. Two holes for the cooling loop that will be placed in EW-3 and 1 hole for a temperature probe. Holes were sealed with hydraulic cement.		



<b>Photo No.</b> <b>20</b>	<b>Date:</b> 09/07/2016	<b>Time:</b> 1431
<b>Direction:</b> North		
<b>Description:</b>  All trenches were filled with flowable backfill by Ozinga.		



<b>Photo No.</b> <b>21</b>	<b>Date:</b> 09/08/2016	<b>Time:</b> 1356
<b>Direction:</b> South		
<b>Description:</b>  Concrete was brought onto the site and poured by Ozinga. TRS used concrete floats to smooth the concrete out by hand.		



<b>Photo No.</b> <b>22</b>	<b>Date:</b> 09/12/2016	<b>Time:</b> 1039
<b>Direction:</b>  East		
<b>Description:</b>  Type W 350 cable was delivered on spools. TRS unspooled the cable so that it could be connected to the MPE electrodes.		



<b>Photo No.</b> <b>23</b>	<b>Date:</b> 09/13/2016	<b>Time:</b> 1117
<b>Direction:</b>  West		
<b>Description:</b>  TRS trenched to a depth of 3 feet below ground surface with a length of 10 feet and a width of 2 feet so that the PCU could be connected to ComEd's electrical pole.		



<b>Photo No.</b> <b>24</b>	<b>Date:</b> 09/13/2016	<b>Time:</b> 1413
<b>Direction:</b>  West		
<b>Description:</b>  TRS completed the recovery piping for the underground electrodes in Marshall St.		





<b>Photo No.</b> <b>25</b>	<b>Date:</b> 09/22/2016	<b>Time:</b> 0915
<b>Direction:</b>  Southeast		
<b>Description:</b>  Creative Crane and Rigging setting up the crane before the equipment arrives on site.		



<b>Photo No.</b> <b>26</b>	<b>Date:</b> 09/22/2016	<b>Time:</b> 1306
<b>Direction:</b>  Northeast		
<b>Description:</b>  Two auto transformers (ATX-1 and ATX-3) as well as a spool of Type W 350 cable was delivered via semi-truck.		



<b>Photo No.</b> <b>27</b>	<b>Date:</b> 09/22/2016	<b>Time:</b> 1525
<b>Direction:</b>  Northeast		
<b>Description:</b>  The condenser unit and cooling towers arrived on site via semi-truck. Creative Crane used the same technique to lift the condenser unit as they did the PCU.		



<b>Photo No.</b> <b>28</b>	<b>Date:</b> 09/27/2016	<b>Time:</b> 1127
<b>Direction:</b>  N/A		
<b>Description:</b>  Drip loop was installed in EW003 to 42 feet below ground surface and consisted of 0.75-inch PEX tubing to 35 feet and 0.5-inch PEX tubing from 35 feet to 42 feet. Two holes were drilled in the plastic cover so that the tubing could be brought into the manhole.		




<b>Photo No.</b> <b>29</b>	<b>Date:</b> 09/27/2016	<b>Time:</b> 1606
<b>Direction:</b>  West		
<b>Description:</b>  All electrode cables were attached to Amp-Traps and attached to phase plates on the PCU.		




<b>Photo No.</b> <b>30</b>	<b>Date:</b> 09/27/2016	<b>Time:</b> 1459
<b>Direction:</b>  South		
<b>Description:</b>  6-inch PVC pipe ran out of the south side of the condenser to the blower and then from the blower was connected to the VGAC vessel.		






<b>Photo No.</b> <b>31</b>	<b>Date:</b> 09/29/2016	<b>Time:</b> 1052	
<b>Direction:</b>  East			
<b>Description:</b>  One of two RTD (temperature control boxes) placed on site. All of the temperature sensors were connected to one of the two boxes which then connected to the computer on site.			

<b>Photo No.</b> <b>32</b>	<b>Date:</b> 09/29/2016	<b>Time:</b> 1639
<b>Direction:</b>  South		
<b>Description:</b>  The primary (left) and secondary (right) LGAC (Liquid Granular Activated Carbon) vessels were hard piped to the condenser unit using 1-inch CPVC pipe.		

A photograph showing two large, white, cylindrical Liquid Granular Activated Carbon (LGAC) vessels mounted on a metal frame. The vessels are connected by a network of grey CPVC pipes. A large grey pipe enters from the left, and a yellow hose is connected to the top of the right vessel. The background is a light-colored, corrugated metal wall with a small window. The ground in the foreground is dark and appears to be a rooftop or industrial area.

<b>Photo No.</b> <b>33</b>	<b>Date:</b> 10/03/2016	<b>Time:</b> 1147	
<b>Direction:</b>  North			
<b>Description:</b>  One of the warning signs up on the exterior of the site warning of the dangers that are present at the site.			



<b>Photo No.</b> <b>34</b>	<b>Date:</b> 10/05/2016	<b>Time:</b> 0941
<b>Direction:</b>  South		
<b>Description:</b>  TRS sprayed Flex Seal on the VP-C2 and groundwater monitoring well located in the adjacent property across Marshall Street. This was done to mitigate any potential voltage issues in public areas.		



<b>Photo No.</b> <b>35</b>	<b>Date:</b> 10/05/2016	<b>Time:</b> 1512
<b>Direction:</b>  West		
<b>Description:</b>  TRS had to build stands for 2 electrical boxes that were placed on site. These boxes were used as extenders so that new cable would not need to be placed.		



<b>Photo No.</b> <b>36</b>	<b>Date:</b> 10/06/2016	<b>Time:</b> 0941
<b>Direction:</b>  West		
<b>Description:</b>  TRS installed a 360-degree camera on top of the east side of the PCU so that they could see what was going on remotely on site if they get an alarm. They checked this camera before starting the system remotely incase somebody is on site or there were any visible signs of equipment damage.		



<b>Photo No.</b> <b>37</b>	<b>Date:</b> 10/07/2016	<b>Time:</b> 0846
<b>Direction:</b>  N/A		
<b>Description:</b>  The solenoid valves in Zone 2 were wrapped with foam because of voltage potential issues following the first voltage survey.		




<b>Photo No.</b> <b>38</b>	<b>Date:</b> 10/10/2016	<b>Time:</b> 1727
<b>Direction:</b>  Southwest		
<b>Description:</b>  The blower out CPVC pipe was connected to the inlet of the northern most chamber of the VGAC system. The outlet was then CPVC piped to the second inlet. The second outlet was then fitted so that it could be connected to 6-inch hose to an exhaust stack that was attached to the PCU. Each outlet and inlet was fitted with a Fernco fitting to reduce the 15-inch opening to a 6-inch opening.		




<b>Photo No.</b> <b>39</b>	<b>Date:</b> 10/11/2016	<b>Time:</b> 1412
<b>Direction:</b>  Northwest		
<b>Description:</b>  TRS performed a voltage survey of concrete in Marshall St. Voltage readings ranged between 8 and 9 volts.		






<b>Photo No.</b> <b>40</b>	<b>Date:</b> 10/12/2016	<b>Time:</b> 1052	
<b>Direction:</b>  North			
<b>Description:</b>  New sensors were placed on site around the perimeter of the site. These sensors will shut down the PCU which then discontinues power application to the treatment volume.			

<b>Photo No.</b> <b>41</b>	<b>Date:</b> 10/25/2016	<b>Time:</b> 1146	
<b>Direction:</b>  Northwest			
<b>Description:</b>  An overview of the entire site showing the above grade MPE electrodes, conveyance piping, VGAC rolloff, and part of the PCU.			

<b>Photo No.</b> <b>42</b>	<b>Date:</b> 11/10/2016	<b>Time:</b> 1007
<b>Direction:</b>  South		
<b>Description:</b>  On November 9, 2016, a 40-foot by 121.5-foot section of Marshall Street was milled and repaved to fully mitigate voltage potential issues.		

A photograph of a residential street, Marshall Street, showing a newly milled and repaved section of the road. The road is dark asphalt, and shadows from trees and buildings are cast across it. A speed limit sign for 30 mph is visible on the right side of the street.

<b>Photo No.</b> <b>43</b>	<b>Date:</b> 11/10/2016	<b>Time:</b> 1008
<b>Direction:</b>  South		
<b>Description:</b>  Two 25-micron bag filters were installed in parallel in order to address a sulfate reducing bacteria issues with the process water.		



<b>Photo No.</b> <b>44</b>	<b>Date:</b> 11/22/2016	<b>Time:</b> 1106
<b>Direction:</b>  Northeast		
<b>Description:</b>  A 6,300-gallon tank was delivered to the site to hold excess process water in an instance where the GETS system was not operating. This was done to minimize the amount of ERH shut downs.		





<b>Photo No.</b> <b>45</b>	<b>Date:</b> 12/06/2016	<b>Time:</b> 1104
<b>Direction:</b>  South		
<b>Description:</b>  Heat trace cable was installed on all exposed water lines to keep lines from freezing. Insulation was also erected around the two LGAC vessels and bag filters.		






<b>Photo No.</b> <b>46</b>	<b>Date:</b> 12/16/2016	<b>Time:</b> 1057
<b>Direction:</b>  Northwest		
<b>Description:</b>  Terra Probe used a track mounted Geoprobe to advance augers for all three confirmation sampling events.		

A photograph showing a track-mounted Geoprobe machine in operation on a snow-covered residential street. A person in dark clothing stands near the machine, which is a yellow and black tracked vehicle with a vertical auger. In the foreground, there is a white and orange striped safety barrier and some equipment. The background shows houses, bare trees, and utility poles under an overcast sky.

<b>Photo No.</b> <b>47</b>	<b>Date:</b> 12/13/2016	<b>Time:</b> 1417	
<b>Direction:</b>  N/A			
<b>Description:</b>  Soil at each sampling depth was collected inside of 2-inch hollow stainless steel tubes. After the tubes were removed from the auger, each end was sealed with tape.			

<b>Photo No.</b> <b>48</b>	<b>Date:</b> 12/13/2016	<b>Time:</b> 1409	
<b>Direction:</b>  N/A			
<b>Description:</b>  After the sampling tubes were removed from the auger and completely sealed, they were cooled to ambient temperature so that the soil could be sampled.			



<b>Photo No.</b> <b>49</b>	<b>Date:</b> 12/13/2016	<b>Time:</b> 1420
<b>Direction:</b>  East		
<b>Description:</b>  After the soil was cooled, soil was removed from the sampling tubes and sampled.		



<b>Photo No.</b> <b>50</b>	<b>Date:</b> 01/24/2017	<b>Time:</b> 1415
<b>Direction:</b>  North		
<b>Description:</b>  After the second round of soil confirmation sampling, a steam sparging system was installed at the site to help remediate PCE at the bottom interval of the treatment zone. Air was supplied to each of the 3 steam sparge points with a 5-hp air compressor and rubber hose. A flow meter was attached to each point.		



<b>Photo No.</b> <b>51</b>	<b>Date:</b> 01/24/2017	<b>Time:</b> 1428
<b>Direction:</b>  N/A		
<b>Description:</b>  A solenoid valve was attached to each of the three steam sparge points which allowed for air addition to each point in 1 hour cycles.		





<b>Photo No.</b> <b>52</b>	<b>Date:</b> 03/15/2017	<b>Time:</b> 0957
<b>Direction:</b>  N/A		
<b>Description:</b>  After all RGs had been achieved at Area 4 and the Illinois EPA gave the go ahead, TRS began demobilizing equipment off site. All MPE electrodes, VPs, GWPs, and TMPs were abandoned by the use of a mini excavator to expose the pipe below existing ground surface. Once the pipes were exposed, Jackson Welding used a torch to cut the pipes at least 2 feet below ground surface.		




<b>Photo No.</b> <b>53</b>	<b>Date:</b> 03/15/2017	<b>Time:</b> 1115
<b>Direction:</b>  Southwest		
<b>Description:</b>  Once the pipes were cut on all of the MPE electrodes, TRS used the mini excavator to lift up on the cut piece of pipe so that the copper water entrainment pipe inside of the black iron steel pipe could be removed.		





<b>Photo No.</b> <b>54</b>	<b>Date:</b> 03/22/2017	<b>Time:</b> 1055
<b>Direction:</b>  Northwest		
<b>Description:</b>  PJ's Concrete Pumping Services abandoned each below grade MPE electrode and monitoring point by forcing a concrete slurry through each CPVC pipe until it was completely filled.		




<b>Photo No.</b> <b>55</b>	<b>Date:</b> 03/22/2017	<b>Time:</b> 1144	
<b>Direction:</b>  Northeast			
<b>Description:</b>  PJ's Concrete Pumping Services abandoned each above grade MPE electrode and monitoring point by pumping concrete into the well and filling in the area around the well up to the existing ground surface. Once the area was filled to existing ground surface, personnel smoothed out the concrete by hand.			

<b>Photo No.</b> <b>56</b>	<b>Date:</b> 03/23/2017	<b>Time:</b> 1321
<b>Direction:</b>  North		
<b>Description:</b>  Two drums of spent carbon were stored inside of the building until they were hauled off and properly disposed of on April 28, 2017.		



<b>Photo No.</b> <b>57</b>	<b>Date:</b> 03/23/2017	<b>Time:</b> 1335	
<b>Direction:</b>  Northeast			
<b>Description:</b>  Area 4 was returned to existing site conditions on March 23, 2017.			

<b>Photo No.</b> <b>58</b>	<b>Date:</b> 04/06/2017	<b>Time:</b> 1142	
<b>Direction:</b>  North			
<b>Description:</b>  All of TRS's equipment and waste was removed from the building, except for the 2 spent carbon drums.			